ORDER NO. AD8812318C9

Service Manual

Compact Disc Player

SL-P333

Color

(K)...Black Type
(S)...Silver Type

Area

Country Code	Area	Color
(E)	Continental Europe	(K) (S)
(EK)	United Kingdom	(K) (S)
(XL)	Australia	(K) (S)
(EG)	F.R. Germany	(K) (S)
(EB)	Belgium	(K) (S)
(EH)	Holland	(K) (S)
(EF)	France	(K) (S)
(Ei)	Italy	(K) (S)
(XA)	Asia, Latin America, Middle Near East, Africa and Oceania	(K)
(XB)	Saudi Arabia	(K)
(PA)	Far East PX	(K)
(PE)	European Military	(K)
(PC)	European Audio Club	(K)

SPECIFICATIONS

■ **Audio**

No. of channels	2 (left and right, stereo)
Frequency response	2–20,000 Hz±0.5 dB
Output voltage	2 V (at 0 dB)
Dynamic range	96 dB
S/N ratio	96 dB
Harmonic distortion	0.003% (1 kHz, 0 dB)
Total harmonic distortion	0.005% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
Output impedance	Approx. 600Ω
Load impedance	More than 10 kΩ
Headphone output level	15 mW max. 32Ω (adjustable)

■ **Signal Format**

Sampling frequency	44.1 kHz
D-A conversion	16-bit linear

■ **Pickup**

Wavelength	780 nm

■ **General**

Power supply	
For Continental Europe:	AC 50/60 Hz, 220 V
For United Kingdom and Australia:	AC 50/60 Hz, 240 V
For others:	AC 50/60 Hz, 110 V/127 V/220 V/240 V
Power consumption	11 W
Dimensions (W×H×D)	430×92×278 mm
weight	3.6 kg

Specifications subject to change without notice.
Weight and dimensions shown are approximate.

Technics

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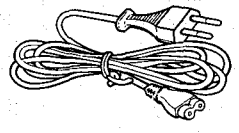
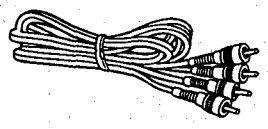
■ ACCESSORIES

- AC power supply cord .. 1

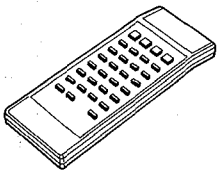


(SJA168)...for [XA], [PA], [PE] and [PC] areas
(SJA173)...for [XL] area
(SJA183)...for [XB] area
(SJA187)...for [E], [EG], [EB], [EH], [EF] and [Ei] areas
(SJA193)...for [EK] area

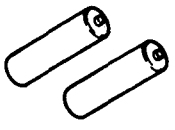
- Stereo connection cable 1
  (SJP2249-3)



- Remote control transmitter 1
  (EUR64766) ..... BLACK
  (EUR64767) ..... SILVER

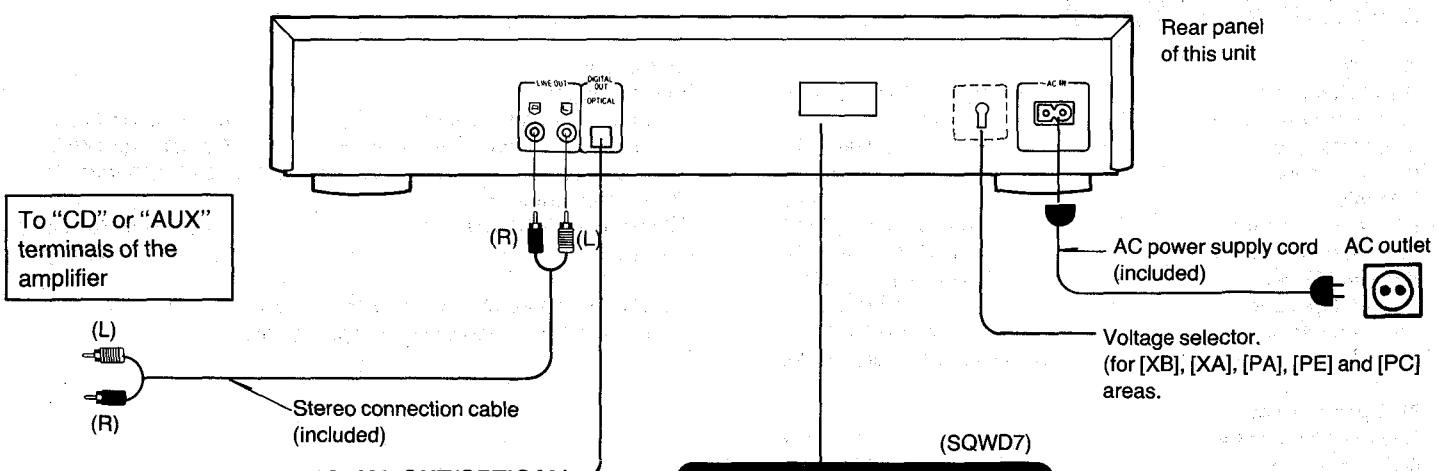


- Batteries 2
  (UN-4NEP/2S) ..... for [XL] area
  (UN-4NE/2S) ..... for others



■ CONNECTIONS

Turn power off on all components before making connections.



•Optical output terminal (DIGITAL OUT/OPTICAL)
This terminal can be used for connection with other equipment that has a digital input terminal, such as an amplifier, by using an optical cable (optional). A dust-protection cap is inserted in this terminal. Remove this cap only when a connection is to be made to this terminal.

Note:
The configuration of the AC outlet and AC power supply cord differs according to area.

(SQWD7)

LUOKAN 1 LASERLAITE

Obs:
Apparaten innehåller laser
Komponent av höger laserklass än klass 1.

ORDER NO. AD8812CDPADJ

Compact Disc Player

SL-P202, P212, P222, P333, P555, P777

DEUTSCH

ELEKTRISCHE JUSTIERUNG

■ Abmessungen und Einstellungen

Achtung:
- Vermeiden Sie den Laserstrahl direkt anzublicken oder zu berühren, weil hohe Gefahr besteht. (Laserstrahlen sind unsichtbar). Während die CD-Einheit auf ON geschaltet ist, werden Laserstrahlen aus der Aufnahmelinse emitiert. Vermeiden Sie direkte Aussetzung von den Laserstrahlen besonders bei Einstellungsoperationen.

Vorbereitung

1. Beseitigen Sie das Kabinett (Siehe Ref. Nr. 1 des Wartungshandbuchs).
2. Beseitigen Sie den CD-Klemmer und Magnet (Siehe Ref. Nr. 2 des Wartungshandbuchs).
3. Beseitigen Sie den CD-Plattenhalter und Stromschalterstab (Siehe Ref. Nr. 3 des Wartungshandbuchs).
4. Setzen Sie die Test-CD-Platte und Magnet auf die Drehplatte.
5. Schalten Sie die CD-Einheit auf ON.
6. Drücken Sie zuerst den OPEN/CLOSE Schalter S102 in Pfeilrichtung, und danach (innerhalb von 4 Sekunden) drücken Sie den Schalter S101 in Pfeilrichtung, wie abgebildet.

Meßinstrumente und Fachgeräte
- Servoverstärkerregler (SZZP1017F oder SZZP1094C)
- Test-CD Platte
1. Test-CD-Platte (SZZP1054C oder SZZP1014F)
2. Unregelmäßige Test-CD-Platte (SZZP1056C)
3. Schwarzbandtest-CD-Platte (SZZP1057C)
- Normale CD-Platte
- Doppelstrahloszilloskop mit 30 MHz Bandbreite oder höher (zusammen mit EXT Auslöser und 1:1 Sonde)
- Tonfrequenzoszillator (AF)
- Konversionsanschluß (SZZP1032F)
- Allen Schraubendreher (M2,0)
- Allen Schraubendreher (M1,27)
- 0,9 mm Umgrenzungslehre (RZZ0297)

Führen Sie die Einstellungen an den Teilen die ersetzt werden wie folgend durch:
(1) Spindelmoter ..... Teile 1,3 bis 8
(2) Drehplatte..... Teile 1,3 bis 8
(3) Optischer Tonabnehmer .... Teile 2 bis 8

Einstellungsverfahren
- Falls Sie den Spindelmotor oder die Drehplatte ersetzt haben, gehen Sie wie folgend durch:

(1) Einstellung des Zwischenraumes der Drehplatte
1. Setzen Sie die 0,9 mm Umgrenzungslehre (RZZ0297) zwischen der Drehplatte und der CD-Empfangsgrundplatte (Siehe Abbildung rechts).
2. Ziehen Sie die Schraube der Drehplatte mit dem 1,27 mm Allen Schraubendreher fest.
3. Schließen Sie die CH. 1 Prüfungssonde des Oszilloskops durch die Terminale VR104 FEG (+) und durch VR106 V.REF (−) über einen Filter an.
   (Anmerkung: Eine Voltzahl von 2,5 V befindet sich am Terminal V. REF. Bitte achten Sie darauf, daß Sie das Chassis der CD-Einheit mit dem Oszilloskop nicht berühren um einen Kurzschluß zu vermeiden).
   Einstellung des Oszilloskops:
   VOLT..... 50 mV
   SWEEP..... 1 ms.
   Eingabekopplung .... DC
4. Stellen Sie den DC Nullausgleich des Oszilloskops ein.
5. Schalten Sie den Plattenspieler auf **ON** und spielen Sie die Test-CD-Platte SZZP1014F oder SZZP1054C ab.
6. Messen Sie die Spannungsamplitude der Signal auf dem Oszilloskop ab.

Anmerkung 1. Falls die bemessene Amplitude zwischen den Werten von +/− 15 mV sich bewegt, liegt die höhe der Drehplatte richtig. Falls die Amplitude außer den oben genannten Werten liegt, stellen Sie die Höhe der Drehplatte mit Hilfe der Umgrenzungslehre ein.

Falls die Amplitude +15 mV überschreitet, setzen Sie die Drehplatte etwas herab.

Falls die Amplitude −15 mV unterschreitet, setzen Sie die Drehplatte etwas herauf.

Anmerkung 2. Falls die bemessene Amplitude weit über oder unter den oben benannten Werte übertrifft, setzen Sie **VR105** genau oder in der Nähe der Mitte und versuchen Sie erneut die Höhe einzustellen (Vergewissern Sie sich, daß Sie gleichzeitig die Fokusausweichung mit einstellen sollen).

(2) Mechanische Einstellung

1. Schließen Sie die CH. 1 Prüfungssonde des Oszilloskops durch TJ101 (+) und durch TJ102 (−) des Servos P.C.B. and.
   Einstellung des Oszilloskops:
   VOLT..... 100 mV
   SWEEP..... 0,5 µs.
   Eingabekopplung .... AC
2. Schalten Sie den Plattenspieler auf **ON** und spielen Sie die Spur 9 auf der Test-CD-Platte (SZZP1056C).
3. Stellen Sie die CD-Einheit im Betriebsmodus und setzen Sie die Einheit wie rechts abgebildet.
4. Stellen Sie beide mechanische Einstellungsschrauben mit dem 2,0 mm Allen-Schraubendreher abwechselnd ein, bis die Amplitudevariation der RF-Signale des Oszilloskops auf das Minimum gebracht wird.
5. Nach der Einstellung, verschließen Sie die mechanische Einstellungen mit dem Siegellack RZZOL01 dicht ab.

(3) "BEST EYE" (PD Ausgleich) Einstellung

1. Schließen Sie die CH. 1 Prüfungssonde des Oszilloskops durch TJ101 (+) und durch TJ102 (−) des Servos P.C.B. an.
   Einstellung des Oszilloskops:
   VOLT..... 100 mV (CH. 1)
   SWEEP..... 0.5 ms.
   Eingabekopplung .... AC
2. Schalten Sie den Plattenspieler auf **ON** und spielen Sie den 0,5 mm schwarzen Punkt auf der Test-CD-Platte SZZP1014F oder SZZP1054C ab.
3. Stellen Sie den **VR101** bis die RF-Signalaugenmusteramplitude maximal liegt.

4) Fokusstärkeeinstellung

1. Schließen Sie die Servoverstärkerregelung an dem CD-Plattenspieler an. (Siehe Seite 7.)
2. Setzen Sie den Verstärkungsschalter der Servoverstärkerregelung auf Position **"2"** ein und den ON/OFF Schalter auf **ON**.
3. Setzen Sie die Oszillatorausgabe für **825 Hz**, **150 mVp-p**, und schliessen Sie diesen an den OSC und GND Terminale des Servoverstärkerreglers an.
4. Schließen Sie die CH. 1 und CH. 2 Prüfungssonden des Oszilloskops an die entsprechenden Terminale der Servoverstärkerreglers TP1 und TP2 an. (TP3 ist Erde)
   Einstellung des Oszilloskops:
   VOLT..... 100 mV
   SWEEP..... 1 ms.
   Eingabekopplung .... AC
5. Spielen Sie die Test-CD-Platte (SZZP1014F oder SZZP1054C) ab.
6. Setzen Sie den Verstärkungsschalter der Servoverstärkerregelung auf Position **"3"** ein um eine 825 Hz-Signal auf dem Oszilloskop sehen zu können. Stellen Sie den **VR104** ein bis die Signalamplitude an beide kanäle gleich werden.
7. Setzen Sie den Verstärkungsschalter zur Position **"2"** wieder ein.

(5) Spurstärkeeinstellung

1. Setzen Sie die Oszillatorausgabe für **1,1 kHz**, **150 mVp-p**, und schließen Sie diesen an den OSC und GND Terminale des Servoverstärkerreglers.
2. Schließen Sie die CH. 1 und CH. 2 Prüfungssonden des Oszilloskops an die entsprechenden Terminale der Servoverstärkerreglers TP1 und TP2. (TP3 ist Erde)
   Einstellung des Oszilloskops:
   VOLT..... 100 mV
   beide Kanäle
   SWEEP..... 1 ms.
   Eingabekopplung .... AC
3. Schalten Sie den Plattenspieler auf **ON** und spielen Sie die Test-CD-Platte SZZP1014F oder SZZP1054C ab.
4. Setzen Sie den Verstärkungsschalter der Servoverstärkerregelung auf Position **"1"** ein und Sie werden eine 1.1 kHz-Signal auf dem Oszilloskop sehen. Stellen Sie den **VR102** ein bis die Signalamplitude an beide Kanäle gleich werden.
5. Setzen Sie den Verstärkungsschalter an Position **"2"** wieder ein.

(6) Einstellung der Fokusausweichung

Anmerkung: Vergewissern Sie sich, daß der Verstärkungsschalter der Servoverstärkerregelung sich in Position **"2"** befindet.

1. Schließen Sie die CH. 1 Prüfungssonde des Oszilloskops durch TJ101 (+) und durch TJ102 (−) des Servos P.C.B. und die CH. 2 Sende (+) mit dem FEG Terminal des VR104 an.
   Einstellung des Oszilloskops:
   VOLT..... 100 mV (CH. 1)
   SWEEP..... 0,5 ms.
   Eingabekopplung .... AC (beide CH. 1 und CH. 2)
   Auslösermodus ..... NORM (Auslöser CH. 1)
2. Schalten Sie den Plattenspieler auf **ON** und spielen Sie die Spur No. **9** auf der Test-CD-Platte SZZP1057C ab.
3. Lösen Sie die Sonde CH. 1 des Oszilloskops in solcher Weise, daß folgende Wellenformen beobachtet werden können. Stellen Sie den **VR105** ein bis die Inklination der Hülle des RF-Signals der CH. 1 sanft herabsagt und die Signalamplitude der CH. 2 auf das Minimum konnt, d.h., daß der Wert der Amplitude A den von Amplitude B entspricht.

(7) Einstellung der Spurausweichung

Anmerkung: Vergewissern Sie sich, daß der Verstärkungsschalter der Servoverstärkerregelung sich in Position **"2"** befindet.

1. Sehließen Sie die CH. 1 Prüfungssonde des Oszilloskops durch TJ101 (+) und durch TJ102 (−) des Servos P.C.B. und die CH. 2 Sonde (+) mit, dem FEG Terminal des VR102 an.
   Einstellung des Oszilloskops:
   VOLT..... 100 mV (CH. 1)
   200 mV (CH. 2)
   SWEEP..... 0,5 ms.
   Eingabekopplung .... AC (beide CH. 1 und CH. 2)
   Auslösermodus ..... NORM (Auslöser CH. 1)
2. Schalten Sie den Plattenspieler auf **ON** und spielen Sie die Spur No. **9** auf der Test-CD-Platte SZZP1057C ab.
3. Lösen Sie die Sonde CH. 1 des Oszilloskops in solcher Weise, daß folgende Wellenformen beobachtet werden können. Stellen Sie den **VR103** ein bis die Inklination der Hülle des RF-Signals der CH. 1 sanft herabsagt und die Signalamplitude der CH. 2 auf das Minimum kommt d. H., daß der Wert der Amplitude A den von Amplitude B entspricht.

(8) Spurausgleicheinstellung

1. Vergewissern Sie sich, daß der Verstärkungsschalter der Servoverstärkerrogelung sich in Position **"2"** befindet.
2. Stellen Sie die AF-Oszillatorausgabe für **1,1 kHz, 600 mVp-p** ein, und schließen Sie den Oszillator an die OSC und GND Terminale der Servoverstärkerregelung an.
3. Schließen Sie die CH. 1 Prüfungssonde des Oszilloskops durch TJ101 (+) und durch TJ102 (−) des Servos P.C.B. und die CH. 2 Sonde (+) mit dem OSC Terminal der Servoverstärkerregelung an.
   Einstellung des Oszilloskops:
   VOLT..... 100 mV (CH. 1)
   SWEEP..... 0,5 ms.
   Eingabekopplung .... AC (beide CH. 1 und CH. 2)
   Auslösermodus ..... NORM (Auslöser CH. 2)
4. Schalten Sie den Plattenspieler auf **ON** und spielen Sie die Test-CD-Platte SZZP1014F oder SZZP1054C ab.
5. Setzen Sie den Verstärkungsschalter der Servoverstärkerregelung auf Position **"1"** ein und stellen Sie **VR106** bis das Zittern der Signalwellenform auf CH. 1 auf das Minimum gebracht wird wie unten gezeigt.
6. Schalten Sie die Servoverstärkerregelungsanschlüsse von der CD-Einheit ab.

(9) Überprüfung der Betriebsoperation nach der Einstellung

•Überprüfung der Sprungsuchfunktion

1. Spielen Sie irgendeine Musik CD-Platte ab.
2. Drücken Sie die Sprungtaste um die normale Sprungsuchfunktion (vor- und rückwärts) zu überprüfen.

•Überprüfung der Handsuchfunktion

1. Spielen Sie irgendeine Musik CD-Platte ab.
2. Drücken Sie die Handsuchfunktionstaste um einwandfreie Handsuchfunktionen entweder bei hoher oder niedriger Geschwindigkeit, zu überprüfen.

•Überprüfung mit Benützung einer defektiven Test-CD-Platte

1. Spielen Sie die defektive Test-CD-Platte (SZZP1054C) an dem 0,9 mm schwarzen Punkt und an dem 0,7 mm Keil und prüfen Sie nach, daß weder Töne übergesprungen werden noch irgendeine Geräusche entstehen.
2. Spielen Sie die mittleren Spuren der unregelmäßigen defektiven Test-CD-Platte und prüfen Sie nach, daß weder Töne übergesprungen werden noch irgendeine Geräusche entstehen.

FRANÇAIS

REGLAGES ELECTRIQUES

■ Mesure et réglage

Attention:
- Il est très dangereux de voir ou de toucher le rayon laser. (Le rayonnement laser est invisible.)
  Une fois l'appareil mis sur la position "marche" (on), le rayon laser est émis de la lentille de la tête de lecture. Eviter donc l'exposition au rayon laser lors du réglage en particulier.

PREPARATION

1. Enlever le coffret (voir Ref. N° 1 dans le Manuel d'Entretien original).
2. Enlever le crampon de disque et l'aimant (voir Ref. N° 2 du même Manuel).
3. Enlever le support de disque et la tige d'interrupteur général (voir Ref. N° 2 du même Manuel).
4. Mettre le disque d'essai et l'aimant en place sur la platine tourne-disque.
5. Mettre le lecteur de disques sur la position "marche".
6. Pousser d'abord le commutateur ouverture/fermeture S102 dans la direction de la flèche, puis avant 4 secondes, pousser le commutateur S101 dans la direction de la flèche comme il est indiqué sur la figure.

Instruments de mesure et outils spéciaux
- Servorégleur de gain (SZZP1017F ou SZZP1094C)
- Disque d'essai

1. Disque d'essai de possibilité de lecture (SZZP1054C ou SZZP1014F)
2. Disque d'essai d'inégalité (SZZP1056C)
3. Disque d'essai de bande noire (SZZP1057C)
   - Disque normal
   - Oscilloscope double trace avec une largeur de bande de 30 MHz ou plus (avec déclencheur EXT et sonde 1:1)
   - Oscillateur pour audiofréquences (AF)
   - Connecteur de conversion (SZZP1032F)
   - Clef hexagonale (M2, 0)
   - Clef hexagonale (M1, 27)
   - Calibre de tolérance de 0,9 mm (RZZ0297)

Le réglage doit être effectué selon la pièce remplacée, comme il est indiqué ci-dessous.

(1) Moteur à broche ..... Articles 1, 3 à 8
(2) Platine tourne-disque ..... Articles 1, 3 à 8
(3) Tête de lecture optique ..... Articles 2 à 8

Procédure de réglage
- Après avoir remplacé le moteur à broche ou la platine tourne-disque, effectuer le réglage suivant:

(1) Réglage de hauteur de platine tourne-disque

1. Introduire le calibre de tolérance de 0,9 mm (RZZ0297) entre la platine tourne-disque et la base de charge (voir la figure à droite).
2. Serrer la vis de fixation de platine tourne-disque à l'aide de la clef hexagonale de 1,27 mm.
3. Raccorder les bornes FEG (+) de VR104 et V.REF (−) de VR106 de la sonde de voie 1 (CH. 1) de l'oscilloscope par un filtre.
   (Remarque: Une tension de 2,5 V apparaît à la borne V.REF. Veiller donc à ne pas court-circuiter le châssis du lecteur de disques et la terre de l'oscilloscope.)
   Réglage de l'oscilloscope:
   Tension (VOLT) ..... 50 mV
   Dent de scie (SWEEP) ..... 1 ms.
   Couplage d'entrée ..... courant continu
4. Régler la balance nulle à courant continu de l'oscilloscope.
5. Mettre le lecteur de disques sur la position "marche" **(ON)**, et commencer à lire le disque d'essai (SZZP1014F ou SZZP1054C).
6. Mesurer l'amplitude de tension du signal sur l'oscilloscope.

Remarque 1. Si l'amplitude mesurée est dans une fourchette de +/− 15 mV, la hauteur de platine tourne-disque est correcte. Par contre, si elle est en dehors de cette fourchette, régler la hauteur de platine tourne-disque en utilisant le calibre de tolérance comme un levier.

Si l'amplitude dépasse +15 mV, abaisser la platine tourne-disque.

Si l'amplitude est inférieure à −15 mV, élever la platine tourne-disque.

Remarque 2. Si l'amplitude mesurée est largement supérieure ou inférieure à la fourchette mentionnée ci-dessus, régler VR105 au centre ou à ses environs, puis essayer de nouveau de régler la hauteur. (Ne pas omettre alors de régler également le foyer.)

(2) Réglage mécanique

1. Raccorder les bornes TJ101 (+) et TJ102 (−) de la sonde de voie 1 (CH. 1) de l'oscilloscope sur la plaquette de circuit imprimé auxiliaire.
   Reglage de l'oscilloscope:
   Tension (VOLT) ..... 100 mV
   Dent de scie (SWEEP) ..... 0,5 ms.
   Couplage d'entrée ..... courant alternatif
2. Mettre le lecteur de disques sur la position "marche" **(ON)**, et commencer à lire la voie **9** du disque d'essai (SZZP1058C).
3. Laisser le lecteur de disques en mode de lecture (PLAY), et le mettre en place comme il est indiqué sur la figure à droite.
4. Régler alternativement les deux vis de réglage mécanique à l'aide de la clef hexagonale de 2,0 mm jusqu'à ce que la variation d'amplitude de signaux de radiofréquence sur l'oscilloscope soit minimisée.

(3) Réglage de la meilleure mire (balance PD)

1. Raccorder les bornes TJ101 (+) et TJ102 (−) de la sonde de voie 1 (CH. 1) de l'oscilloscope sur la plaquette de circuit imprimé auxiliaire.
   Réglage de l'oscilloscope:
   Tension (VOLT) ..... 100 mV
   Dent de scie (SWEEP) ..... 0,5 ms.
   Couplage d'entrée ..... courant alternatif
2. Mettre le lecteur de disques sur la position "marche" **(ON)**, et commencer à lire le point noir de 0,5 mm sur le disque d'essai (SZZP1014F ou SZZP1054C).
3. Régler **VR101** jusqu'à ce que l'amplitude de mire de signaux de radiofréquence soit maximisée.

(4) Réglage du gain de foyer

1. Raccorder le servorégleur de gain au lecteur de disques (voir page 7).
2. Mettre le commutateur de gain du servorégleur de gain sur la position **"2"** et l'interrupteur marche/arrêt sur la position "marche" **(ON)**.
3. Régler la puissance de sortie de l'oscillateur pour audiofréquences sur **825 Hz, 150 mVp.p**, et raccorder les bornes OSC (oscillateur) et GND (terre) de ce dernier sur le servorégleur de gain.
4. Raccorder respectivement les sondes de la voie 1 (CH. 1) et la voie 2 (CH. 2) de l'oscilloscope aux bornes TP1 et TP2 du servorégleur de gain [TP3 est la terre (GND)].
   Réglage de l'oscilloscope:
   Tension (VOLT) ..... 100 mV (pour les deux voies)
   Dent de scie (SWEEP) ..... 1 ms.
   Couplage d'entrée ..... courant alternatif
5. Commencer à lire le disque d'essai (SZZP1014F ou SZZP1054C).
6. Mettre le commutateur de gain du servorégleur de gain sur la position **"3"**. Un signal de 825 Hz sera alors observé sur l'oscilloscope. Régler **VR104** jusqu'à ce que les amplitudes de signaux des deux voies soient identiques l'une à l'autre.
7. Remettre le commutateur de gain sur la position **"2"**.

(5) Réglage du gain de piste

1. Régler la puissance de sortie de l'oscillateur pour audiofréquences sur **1,1 kHz, 150 mVp.p**, et raccorder les bornes OSC (oscillateur) et GND (terre) de ce dernier sur le servorégleur de gain.
2. Raccorder respectivement les sondes de la voie 1 (CH. 1) et la voie 2 (CH. 2) de l'oscilloscope aux bornes TP1 et TP2 du servorégleur de gain [TP3 est la terre (GND)].
   Réglage de l'oscilloscope:
   Tension (VOLT) ..... 100 mV (pour les deux voies)
   Dent de scie (SWEEP) ..... 1 ms.
   Couplage d'entrée ..... courant alternatif
3. Mettre le lecteur de disques sur la position "marche" **(ON)**, et commencer à lire le disque d'essai (SZZP1014F ou SZZP1054C).
4. Mettre le commutateur de gain du servorégleur de gain sur la position **"1"**. Un signal de 1,1 kHz sera alors observé sur l'oscilloscope. Régler **VR102** jusqu'à ce que les amplitudes de signaux des deux voies soient identiques l'une à l'autre.
5. Remettre le commutateur de gain sur la position **"2"**.

(6) Réglage de décalage de foyer

Remarque: S'assurer que le commutateur de gain du servorégleur de gain est mis sur la position **"2"**.

1. Raccorder les bornes TJ101 (+) et TJ102 (−) de la sonde de voie 1 (CH. 1) de l'oscilloscope sur la plaquette de circuit imprimé auxiliaire, et raccorder également la sonde de voie 2. (CH. 2) et la borne FEG de VR104.
   Réglage de l'oscilloscope:
   Tension (VOLT) ..... 100 mV (voie 1)
   100 mV (voie 2)
   Dent de scie (SWEEP) ..... 0,5 ms.
   Couplage d'entrée ..... courant alternatif (pour les deux voies)
   Mode de déclenchement .... NORM (voie 1 de déclenchement)
2. Mettre le lecteur de disques sur la position "marche" **(ON)**, et commencer à lire la voie **9** du disque d'essai (SZZP1057C).
3. Déclencher la voie 1 (CH. 1) de l'oscilloscope pour que les formes d'onde suivantes soient observées. Régler **VR105** jusqu'à ce que l'inclinaison dans l'enveloppe de signaux de radiofréquence sur la voie 1 (CH. 1) soit en douceur et que l'amplitude de signaux de la voie 2 (CH. 2) soient minimisée, c'est-à-dire que l'amplitude A soit égale à celle B.

(7) Réglage de décalage de voie

Remarque: S'assurer que le commutateur de gain du servorégleur de gain est mis sur la position **"2"**.

1. Raccorder les bornes TJ101 (+) et TJ102 (−) de la sonde de voie 1 (CH. 1) de l'oscilloscope sur la plaquette de circuit imprimé auxiliaire, et raccorder également la sonde de voie 2. (CH. 2) et la borne TEG de VR102.
   Réglage de l'oscilloscope:
   Tension (VOLT) ..... 100 mV (voie 1)
   200 mV (voie 2)
   Dent de scie (SWEEP) ..... 0,5 ms.
   Couplage d'entrée ..... courant alternatif (pour les deux voies)
   Mode de déclenchement .... NORM (voie 1 de déclenchement)
2. Mettre le lecteur de disques sur la position "marche" **(ON)**, et commencer à lire la voie **9** du disque d'essai (SZZP1057C).
3. Déclencher la voie 1 (CH. 1) de l'oscilloscope pour que les formes d'onde suivantes soient observées. Régler **VR103** jusqu'à ce que l'inclinaison dans l'eveloppe de signaux de radiofréquence sur la voie 1 (CH. 1) soit en douceur et que l'amplitude de signaux de la voie 2 (CH. 2) soient minimisée, c'est-à-dire que l'amplitude A soit égale à celle B.

(8) Réglage de balance de voie

1. S'assurer que le commutateur de gain du servorégleur de gain est mis sur la position **"2"**.
2. Régler la puissance de sortie de l'oscillateur pour audiofréquences sur **1,1 kHz, 600 mVp.p**, et raccorder les bornes OSC (oscillateur) et GND (terre) de ce dernier sur le servorégleur de gain.
3. Raccorder les bornes TJ101 (+) et TJ102 (−) de la sonde de voie 1 (CH. 1) de l'oscilloscope sur la plaquette de circuit imprimé auxiliaire, et raccorder également la sonde de voie 2. (CH. 2) et la borne OSC sur le servorégleur de gain.
   Réglage de l'oscilloscope:
   Tension (VOLT) ..... 100 mV (voie 1)
   Dent de scie (SWEEP) ..... 0,5 ms.
   Couplage d'entrée ..... courant alternatif (pour les deux voies)
   Mode de déclenchement .... NORM (voie 2 de déclenchement)
4. Mettre le lecteur de disques sur la position "marche" **(ON)**, et commencer à lire le disque d'essai (SZZP1014F ou SZZP1054C).
5. Mettre le commutateur de gain du servorégleur de gain sur la position **"1"**, et régler **VR106** jusqu'à ce que le vacillement contenu dans la forme d'onde de la voie 1 (CH. 1) soit minimisé comme il est indiqué ci-dessous.
6. Débrancher les conducteurs du servorégleur de gain du lecteur de disques.

ESPAÑOL

(9) Contrôle de fonctionnement de lecture après réglage

•Contrôle de la recherche par sauts

1. Lire un disque de programme musical ordinaire.
2. Appuyer sur la touche de saut pour contrôler le fonctionnement normal de recherche par sauts (dans les directions vers l'avant et vers l'arrière).

•Contrôle de la recherche manuelle

1. Lire un disque de programme musical ordinaire.
2. Appuyer sur la touche de recherche manuelle pour contrôler le fonctionnement normal de recherche manuelle à vitesse réduite ou élevée (dans les directions vers l'avant et vers l'arrière).

•Contrôle de l'utilisation d'un disque défectueux

1. Lire le point noir de 0,7 mm et le coin de 0,7 mm sur le disque d'essai défectueux (SZZP1054C), et vérifier qu'il ne se produit aucun saut sonore ou bruit.
2. Lire les voies du milieu du disque d'essai inégal, et vérifier qu'il ne se produit aucun saut sonore ou bruit.

ESPAÑOL

AJUSTE ELECTRICO

■ MEDICIONES Y AJUSTES

Precaución:

•Es muy peligroso mirar directamente o tocar los rayos de láser (Las radiaciones de láser son invisibles.) Cuando el aparato está encendido las radiaciones de láser son emitidas desde el lente de captación. Evite exponerse a los rayos de láser, especialmente mientras realice los ajustes.

PREPARACION

1. Quite la cabina (ver el número de referencia 1 en el manual de servicio original).
2. Quite el freno del disco y el imán (ver el número de referencia 2 del mismo manual).
3. Quite el soporte del disco y la barra del interruptor de corriente (ver el número de referencia 3 del mismo manual).
4. Coloque el disco de prueba e imán en el tornamesa.
5. Encienda el aparato.
6. Primero empuje el conmutador OPEN/CLOSE (S102) en la dirección de la flecha y luego, dentro de un lapso de 4 segundos, empuje el conmutador S101 en la dirección de la flecha como se muestra en la figura.

Instrumentos de medición y herramientas especiales

•Ajustador de servoganancia (SZZP1017F o SZZP1094C)
•Discos de prueba
1. Disco para pruebas de reproducción (PLAY) (SZZP1054C o SZZP1014F).
2. Disco de superficie no uniforme para pruebas (SZZP1056C).
3. Disco de banda negra para pruebas (SZZP1057C)

•Disco normal
•Osciloscopio de dos canales con amplitud de banda de 30 MHz o mejorada (con "disparador" EXT y sonda de 1:1)
•Oscilador de frecuencia de audio (FA)
•Conector de conversión (SZZP1032F)
•Llave Allen (M2.0)
•Llave Allen (M1.27)
•Calibrador de 0.9 mm (RZZ0297)

Los ajustes a ejecutar dependen de las partes a ser remplazadas de acuerdo a lo siguiente:

(1) Motor del eje ..... Items 1, y del 3 al 8
(2) Tornamesa ..... Items 1, y del 3 al 8
(3) Captador óptico ..... Items del 2 al 8

Procedimiento de ajuste

•Si ha remplazado el motor del eje o tornamesa, realice los siguientes ajustes:

(1) AJUSTE DE LA ALTURA DEL TORNAMESA

1. Introduzca el calibrador de 0.9 mm (RZZ0297) entre el tornamesa y la base de carga (ver la figura a la derecha).
2. Ajuste el tornillo de retención del tornamesa con la llave Allen de 1.27 mm.
3. Conecte la sonda CH.1 del osciloscopio al FEG (+) del VR104 y el V.REF (−) del VR106 mediante un filtro. (Nota: Un voltaje de 2.5 voltios aparecerá en el terminal V.REF. Tener cuidado de que no se establezca un corto circuito entre el chasis del aparato y el conductor de tierra del osciloscopio).
   Ajustes en el osciloscopio:
   Voltaje ..... 50 mV
   "Sweep" ..... 1 ms
   "Coupling" de entrada ..... CD
4. Ajuste el balance cero DC del osciloscopio.
5. Encienda el aparato y reproduzca el disco de prueba (SZZP1014F o SZZP1054C).
6. Mida la amplitud del voltaje de la señal en el osciloscopio.

Nota 1. Si la amplitud medida está en el rango de +/− 15 mV, la altura del tornamesa es correcta. Si está fuera de este rango, ajuste la altura del tornamesa usando el calibrador como palanca.
Si la amplitud excede los +15 mV, baje el tornamesa.
Si la amplitud es menor de −1 mV, eleve el tornamesa.
Nota 2. Si la amplitud medida, sobrepasa o está muy por debajo del rango arriba indicado, coloque el VR105 en o cerca del centro, y luego trate de ajustar la altura de nuevo.
(Luego ajuste la compensación del foco.)

(2) AJUSTES MECANICOS

1. Conecte la sonda CH1 del osciloscopio al TJ101 (+) y TJ102 (−) en el P.C.B. Servo.
   Ajustes en el osciloscopio:
   Voltaje ..... 100 mV
   "Sweep" ..... 0.5 µs.
   "Coupling" de entrada ..... CA
2. Encienda el aparato, y reproduzca la banda 9 en el disco de prueba (SZZP1056C).
3. Con el aparato en el modo de reproducción, colóquelo en la posición indicada en la figura de la derecha.
4. Ajuste de manera alternada los dos tornillos de ajuste mecánicos con la llave Allen de 2.0 mm hasta que la señal RF de la variación de amplitud en el osciloscopio sea mínima.
5. Despues de completar los ajustes, selle los ajustes mecánicos con la pintura RZZOL01.

(3) AJUSTE VISUAL OPTIMO (EQUILIBRIO DE PD)

1. Conecte la sonda CH.1 del osciloscopio al TJ101 (+) y TJ102 (−) en el P.C.B. Servo.
   Ajustes en el osciloscopio:
   Voltaje ..... 100 mV
   "Sweep" ..... 0.5 µs.
   "Coupling" de entrada ..... CA
2. Encienda el aparato y reproduzca el punto negro de 0.5 mm del disco de prueba (SZZP1014F O SZZP1054C).
3. Ajuste el **VR101** hasta que la amplitud del patrón de "ojo" de la señal RF sea máxima.

(4) AJUSTE DE LA GANANCIA DE ENFOQUE

1. Conecte el ajustador de servoganancia al aparato (ver la página 7).
2. Coloque el conmutador del ajustador de ganancia en la posición **"2"** y el interruptor ON/OFF en **ON**.
3. Ajuste la emisión del oscilador AF en **825 Hz, 150 mVp-p** y conéctelo a los terminales OSC y GND del ajustador de ganancia del servo.
4. Conecte las sondas CH.1 y CH.2 del osciloscopio a los terminales TP1 y TP2 del ajustador de servoganancia respectivamente (el TP3 es para tierra).
   Ajuste en el osciloscopio:
   Voltaje ..... 100 mV (ambos canales)
   "Sweep" ..... 1 ms
   "Coupling" de entrada ..... CA
5. Reproduzca el disco de prueba (SZZP1014F o SZZP1054C).
6. Coloque el conmutador del ajustador de ganancia en la posición **"3"** y verá una señal de 825 Hz en el osciloscopio. Ajuste el **VR104** hasta que las amplitudes de la señal en ambos canales sean idénticas unas a otras.
7. Coloque otra vez el conmutador de ganancia en la posición **"2"**.

(5) AJUSTE DE LA GANANCIA DEL SEGUIMIENTO (TRACKING)

1. Ajuste la salida del oscilador de FA en **1.1 kHz. 150 mVp-p** y conéctelo a los terminales OSC y GND del ajustador de servoganancia.
2. Coloque las sondas CH. 1 y CH. 2 del osciloscopio en los terminales TP1 y TP2 del ajustador de ganancia, respectivamente (el TP3 es de tierra).
   Ajustes en el osciloscopio:
   Voltaje ..... 100 mV (ambos canales)
   "Sweep" ..... 1 ms
   "Coupling" de entrada ..... CA
3. Encienda el aparato y reproduzca el disco de prueba (SZZP1014F o SZZP1054C).
4. Coloque el conmutador del ajustador de ganancia en la posición **"1"** verá una señal de 1,1 kHz en el osciloscopio. Ajuste el **VR102** hasta que las amplitudes de la señal en ambos canales sean idénticas unas a otras.
5. Coloque otra vez el conmutador de ganancia en la posición **"2"**.

(6) AJUSTE DE LA COMPENSACION DEL ENFOQUE

Nota: Asegúrese de que el conmutador del ajustador de servoganancia esté colocado en la posición **"2"**.

1. Conecte la sonda CH. 1 del osciloscopio al TJ101 (+) y TJ102 (−) del P.C.B. Servo y la sonda CH. 2 (+) al terminal FEG del VR104.
   Ajustes en el osciloscopio:
   Voltaje ..... 100 mV (CH. 1)
   100 mV (CH. 2)
   "Sweep" ..... 0,5 ms
   "Coupling" de entrada ..... CA (ambos canales 1 y 2)
   Modalidad de disparo ..... NORMAL (disparo del CH. 1)
2. Encienda el aparato y reproduzca la banda **9** del disco de prueba (SZZP1057C).
3. Dispare el CH. 1 del osciloscopio de tal manera que las siguientes ondas aparezcan. Ajuste el **VR103** hasta que la base de la envoltura de la señal RF en el CH. 1 sea uniforme y la amplitud de la señal en el CH. 2 sea mínima, es decir, cuando la amplitud A sea igual a la amplitud B.

(7) AJUSTE DE LA COMPENSACION DEL SEGUIMIENTO (TRACKING)

Nota: Asegúrese de que el conmutador del ajustador de servoganancia esté colocado en la posición **"2"**.

1. Conecte la sonda CH. 1 del osciloscopio al TJ101 (+) y TJ102 (−) del P.C.B. Servo y la sonda CH. 2 (+) al terminal TEG del VR102.
   Ajustes en el osciloscopio:
   Voltaje ..... 100 mV (CH. 1)
   200 mV (CH. 2)
   "Sweep" ..... 0,5 ms
   "Coupling" de entrada ..... CA (ambos canales 1 y 2)
   Modalidad de disparo ..... NORMAL (disparo del CH. 1)
2. Encienda el aparato y reproduzca la banda **9** del disco de prueba (SZZP1057C).
3. Dispare el CH. 1 del osciloscopio de tal manera que las siguientes ondas aparezcan. Ajuste el **VR103** hasta que la base de la envoltura de la señal RF en el CH. 1 sea uniforme y la amplitud de la señal en el CH. 2 sea mínima, es decir, cuando la amplitud A sea igual a la amplitud B.

(8) AJUSTE DEL BALANCE DEL SEGUIMIENTO (TRACKING)

1. Asegúrese de que el conmutador del ajustador de servoganancia esté colocado en la posición **"2"**.
2. Ajuste la salida del oscilador de FA en **1,1 kHz, 600 mVp-p** y conéctelo a los terminales OSC y GND del ajustador de servoganancia.
3. Conecte la sonda CH. 1 del osciloscopio al TJ101 (+) y al TJ102 (−) del P.C.B. Servo y la sonda CH. 2 (+) al terminal OSC del ajustador de servoganancia.
   Ajustes en el osciloscopio:
   Voltaje ..... 100 mV (CH. 1)
   "Sweep" ..... 0.5 ms
   "Coupling" de entrada ..... CA (ambos canales 1 y 2)
   Modalidad de disparo ..... NORMAL (disparo del CH. 2)
4. Encienda el aparato, y reproduzca el disco de prueba (SZZP1014F o SZZP1054C).
5. Coloque el conmutador del ajustador de servoganancia en la posición **"1"** y ajuste el **VR106** hasta que las irregularidades de las ondas de la señal en el CH. 2 sea mínima como se muestra más abajo.
6. Desconecte el ajustador de servoganancia del aparato.

(9) COMPROBACION DE LA FUNCION DE REPRODUCCION DESPUES DE LOS AJUSTES

•Comprobación de la localización de salto

1. Reproduzca un disco de programa musical ordinario.
2. Presione el botón de salto para comprobar la función normal de localización de salto (en ambas direcciones, de avance y retroceso).

•Comprobación de la localización manual

1. Reproduzca un disco de programa musical ordinario.
2. Presione el botón de localización manual para comprobar las funciones de localización manual a velocidad lenta o alta (en ambas direcciones, de avance y retroceso).

•Comprobación mediante el empleo de un disco defectuoso

1. Reproduzca el punto negro de 0,7 mm y el patrón de "cuña" de 0,7 mm del disco defectuoso de prueba (SZZP1054C) y compruebe de que no ocurran saltos ni ruidos.
2. Reproduzca las bandas intermedias del disco de prueba de superficie no uniforme para pruebas y verique que no ocurran saltos ni ruidos.

Printed in Japan
F881223000 TW/TK

■ PRECAUTION OF LASER DIODE

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens.
Wave length: 780 nm
Maximum output radiation power from pick up: 100 µW/VDE

Laser radiation from the pick up lens is safety level, but be sure the followings:

1. Do not disassemble the optical pick up unit, since radiation from exposed laserd diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pick up lens for a long time.

ACHTUNG: Dieses produkt enthält eine laserdiode. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit abgestrahlt.

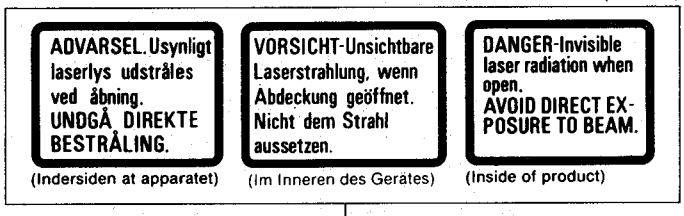
Wellenlänge: 780 nm
Maximale strehlungsleistung der lasereinheit: 100 µW/VDE

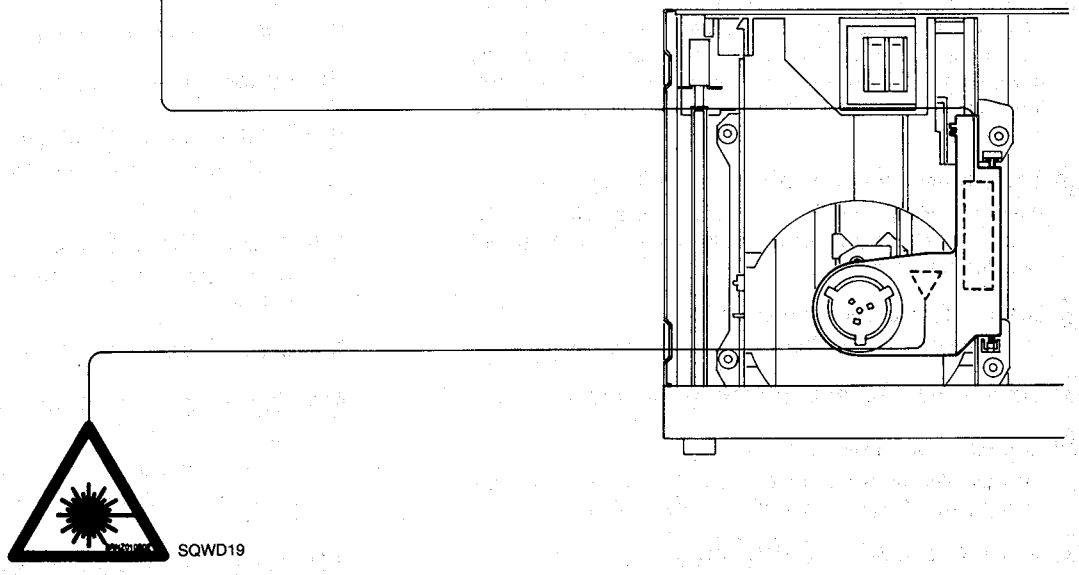
Die strahlung an der lasereinheit ist ungefährlich, wenn folgende punkte beachtet werden:

1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdiode gefährlich ist.
2. Den werksseitig justierten einstellregler der lasereinreit nicht verstellen.
3. Nicht mit optischen instrumenten in die fokussierlinse blicken.
4. Nicht über längere zeit in die fokussierlinse blicken.

ADVARSEL: I dette a apparat anvendes laser.

(SQWD87)


ADVARSEL. Usynligt laserlys udstråles ved åbning. UNDGÅ DIREKTE BESTRÅLING.
(Indersiden at apparatet)
VORSICHT-Unsichtbare Laserstrahlung, wenn Abdeckung geöffnet. Nicht dem Strahl aussetzen.
(Im Inneren des Gerätes)
DANGER-Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.
(Inside of product)

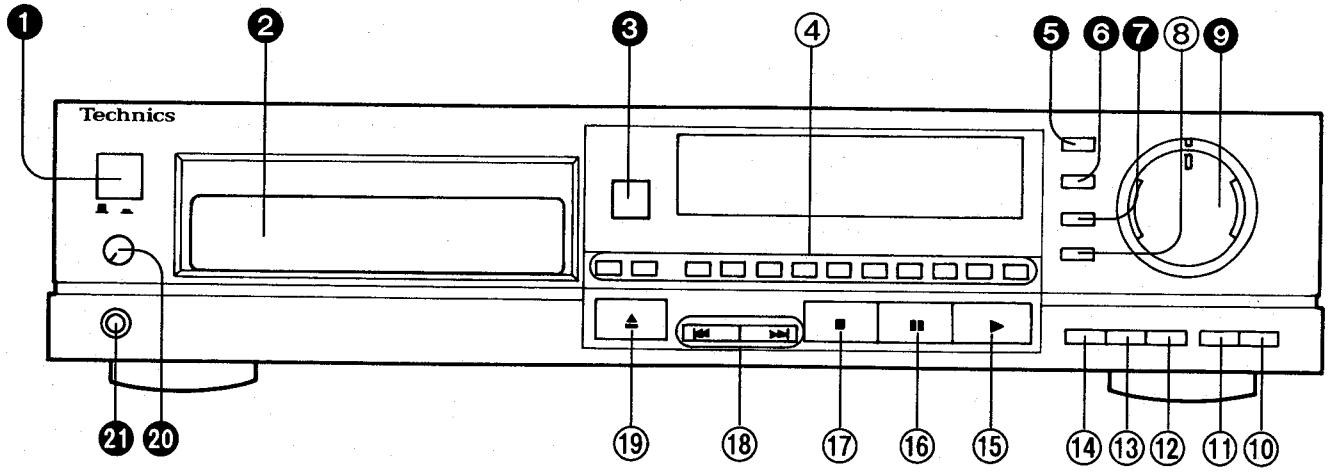


SQWD19

VAROITUS! Laite sisältää laserdiodin,
joka lähettää näkymätöntä silmille
vaarallista lasersäteilya

■ LOCATION OF CONTROLS

The functions indicated by the black numbers (with white background, ④ etc.) can also be activated using the remote control transmitter.



Control section

❶ Power switch (power)

If a disc has already been loaded, play will begin when the power is turned ON.

❷ Disc holder

❸ Remote control signal sensor (remote sensor)

④ Numeric buttons (+10, 0, 1~10)

❺ Edit tape length button (edit tape length)

When compact discs are to be recorded to tape, this button can be used to calculate the number of tracks that can be recorded on each side of the tape, depending on the length of the cassette tape used, so that as little tape as possible is wasted.

❻ Tape-side select button (side A/B)

When recording compact discs to tape, this button can be used to check the number of tracks and amount of tape left over for side A or B.

❼ Disc link button (disc link)

This button can be used for edit recording from several discs.

⑧ Time mode select button (time mode)

❾ Search dial (search)

This dial can be used to locate specific places on the disc during play at high speed, either forward or reverse.

⑩ Auto cue button (auto cue)

Pressing this button causes the unit to skip automatically to the beginning of the next track on the disc and switch to the play standby mode.

⑪ Repeat button (repeat)

⑫ Recall button (recall)

This button can be used to display the contents of the programmed track sequence for confirmation.

⑬ Clear button (clear)

This button can be used to clear tracks from the programmed sequence one at a time.

⑭ Programmed-play button (program)

Pressing this button initiates the programmed play mode. You can then enter specific tracks using the numeric buttons.

⑮ Play button (▶ play)

⑯ Pause button (❚❚ pause)

⑰ Stop button (■ stop)

This button can be used to stop disc play, as well as to cancel the various play modes.

⑱ Skip buttons (|◀◀ skip/skip ▶▶|)

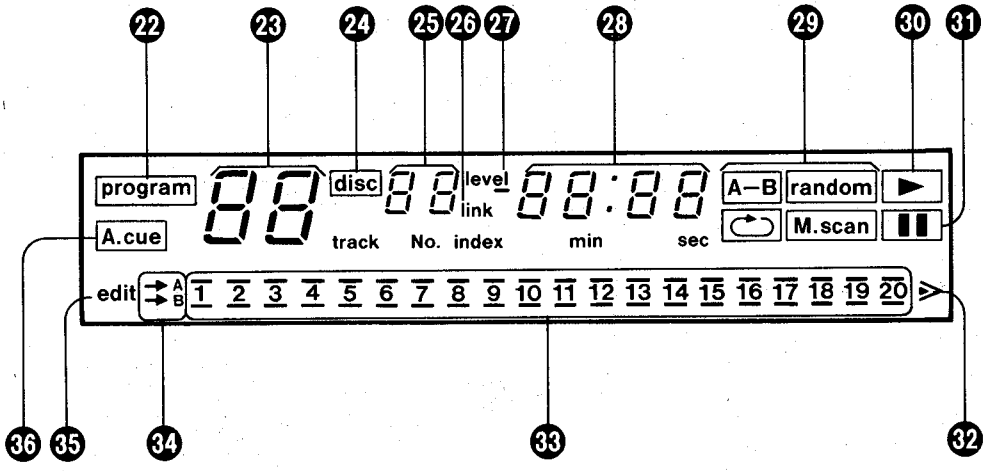
These buttons can be used to skip by track in the forward or reverse direction.

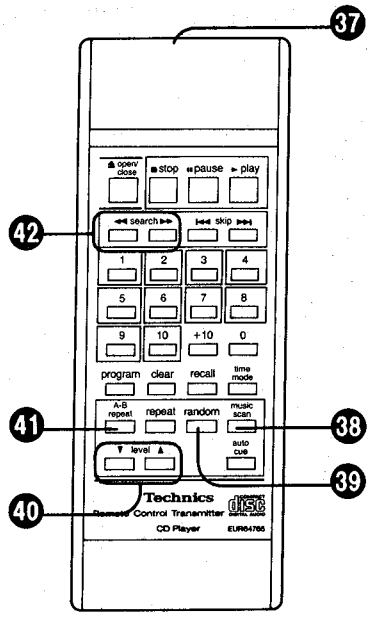
⑲ Disc holder open/close button (▲ open/close)

⑳ Headphones volume control (level)

Avoid listening to music at high volume levels for extended periods of time.

㉑ Headphones jack (phones)





(EUR64766) ..... BLACK
(EUR64767) ..... SILVER

Unnumbered buttons on the remote control transmitter function identically to their corresponding parts on the unit.

Indicators section

㉒ Programmed-play indicator (program)

㉓ Track number display (track)

㉔ Disc indicator (disc)

㉕ Index/program number display (index/No.)

The index number display indicates the number of the index when the discs which include index numbers (subdivisions within specific tracks) is played.
The program number display indicates the programmed order of tracks in the program mode.

㉖ Disc link indicator (link)

㉗ Level indicator (level)

This indicator lights when the output level is attenuated by the remote control.

㉘ Time display (min/sec)

㉙ Operation indicators

The following indicators light during their respective operations.

A-B: A-B repeat play (remote control operation)
random: Random play (remote control operation)
: Repeat play
M. scan: Music scan (remote control operation)

㉚ Play indicator (►)

㉛ Pause indicator (▮▮)

㉜ "Over" mark (≫)

This indicator lights if the total number of tracks on the disc is 21 or more.

㉝ Track number indicator (1–20)

㉞ Tape side indicator (→ A/B)

㉟ Compact disc edit indicator (edit)

㊱ Auto cue indicator (A. cue)

Remote control transmitter

㊲ Remote control signal transmission window

㊳ Music scan button (music scan)

This button can be used to play the first part of each track in order.

㊴ Random play button (random)

This button can be used to play the tracks on a disc in a random sequence.

㊵ Level buttons (▼ level ▲)

These buttons can be used to control output level (from 0 dB to −12 dB).

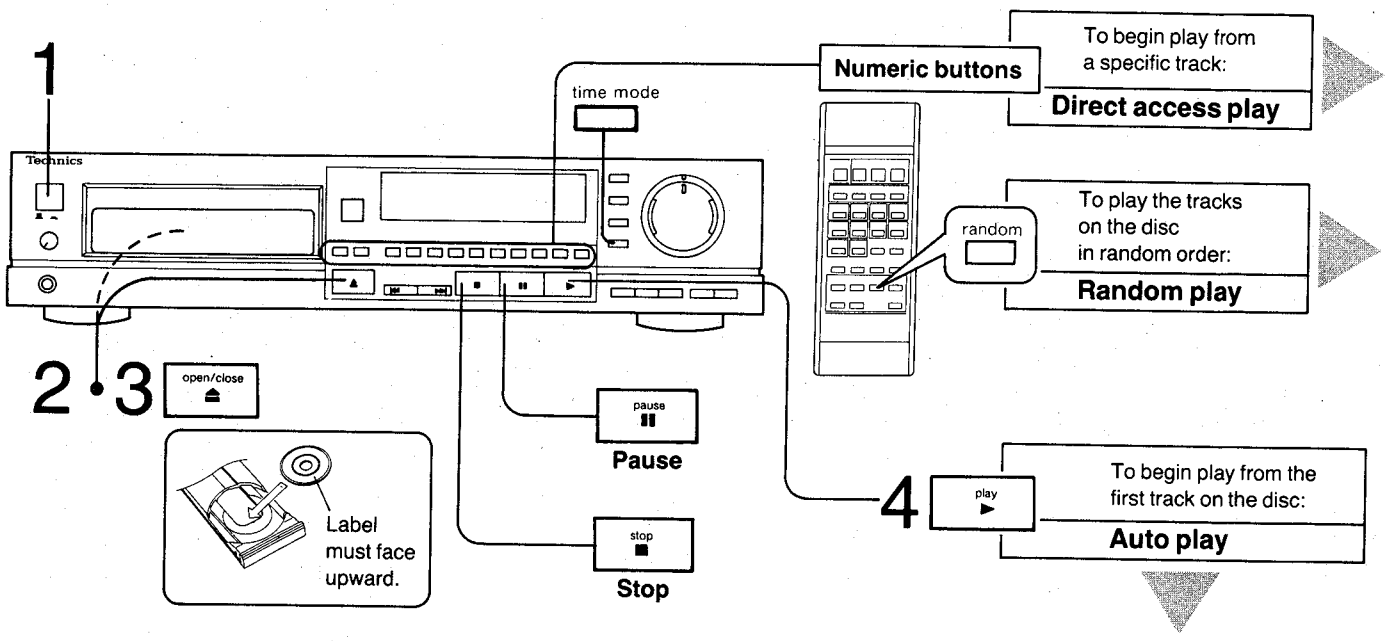
㊶ A–B repeat button (A–B repeat)

This button can be used to play the portion of a disc between two points (A and B) chosen by you.

㊷ Search buttons (◀◀ search ▶▶)

These buttons can be used to move rapidly forward or backward on the disc during play. The search speed is slow when the button is pressed at first and becomes faster if the button is pressed and held continuously.

■ BASIC OPERATION



Auto play

Playing an entire disc from the first track to the last.

Basic operations such as turning the power ON and OFF are the same for the other play modes as well.

1 Press the power switch to turn power ON.

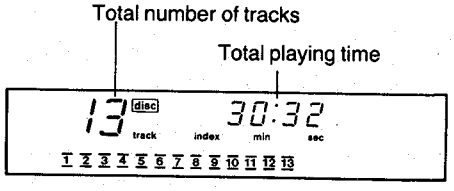
Turn down your amplifier volume first. If, inadvertently, the volume is set too loud, damage to your speakers could result.

Auto-start function
If a disc has already been loaded into the disc holder, play will begin right away when the power is turned ON. This is for timer play.

2 Press the open/close button to open the disc holder and insert a disc.

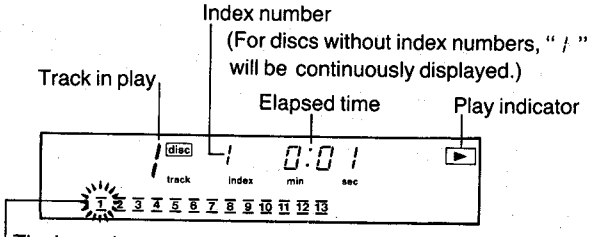
3 Press the open/close button again to close the disc holder.

The total number of tracks on the disc and the total playing time are displayed.



4 Press the play button.

Disc play begins from the first track on the disc.



•The bars above and below the number of the track in play flash. They go out when play finishes.

- The unit stops automatically when the last track on the disc finishes playing. (The display returns to the total number of tracks and total playing time indications.)
- Switch power OFF when finished.

•To stop disc play, press the stop button.

The unit switches to the stop mode and the total number of tracks and total playing time are displayed.

Notes:

- Attempting to change discs while the disc holder is in the process of opening can scratch or damage your discs.
- Before attempting to use the remote control transmitter to open the disc holder, make sure that there are no obstructions in front of the unit (the closed glass door of an audio rack, etc.)
- The total playing time displayed includes the silent sections between tracks. For this reason, it may differ by a few seconds from the playing time printed in the disc's liner notes.

Direct access play

To listen to a disc from track 3, press the numeric button [3]. Play begins directly from track 3.

Choosing a specific track

Tracks 1–10: Press the appropriate numeric button [1] – [10] directly.

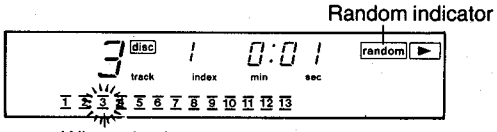
Tracks 11 and up: First press [+10], then [0] – [9]. (Press [+10] twice for 20, three times for 30, and so on.)

- Playback begins from the track selected and continues from subsequent tracks until the end of the disc is reached.
- The unit stops automatically when the last track on the disc finishes playing.

Random play
(by the remote control transmitter only)

All the tracks on the disc are played in a new, randomly selected order. The order is different every time. Listening to tracks in a different order can be a refreshing change of pace.

Press the random play button on the remote control transmitter.



When play begins from track 3
(The bars above and below the number of the track in play flash. They go out when play finishes.)

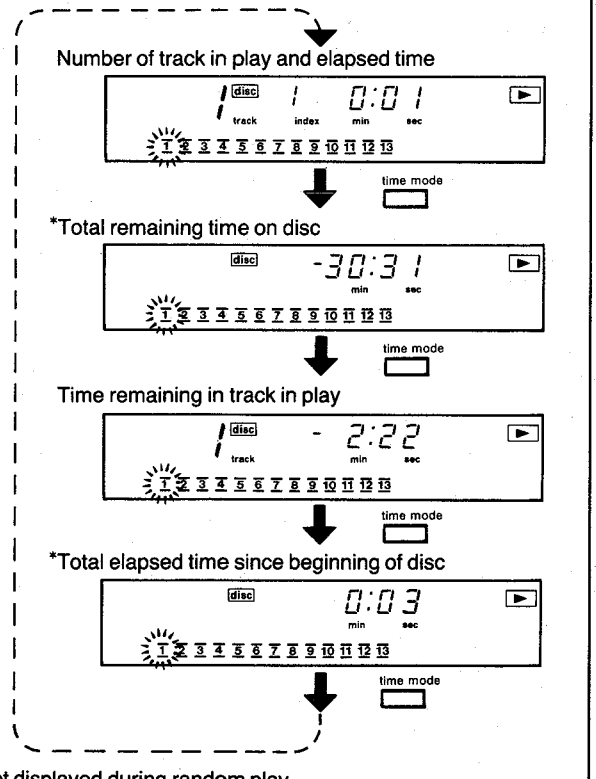
- The unit stops automatically when all the tracks on the disc finish playing.

•To cancel random play while a disc is playing, press the random play button again.

When the track in play finishes playing, play continues from subsequent tracks in the normal order until the end of the disc is reached.

To change the indications of the time mode display

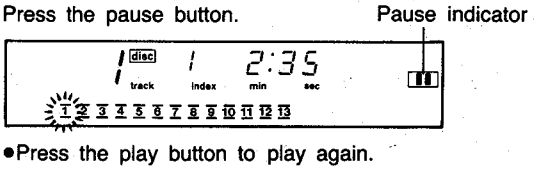
Each time the time mode select button is pressed during play or when the unit is in the pause mode switches the display among the following modes.


Number of track in play and elapsed time
time mode
*Total remaining time on disc
time mode
Time remaining in track in play
time mode
*Total elapsed time since beginning of disc
time mode

*not displayed during random play

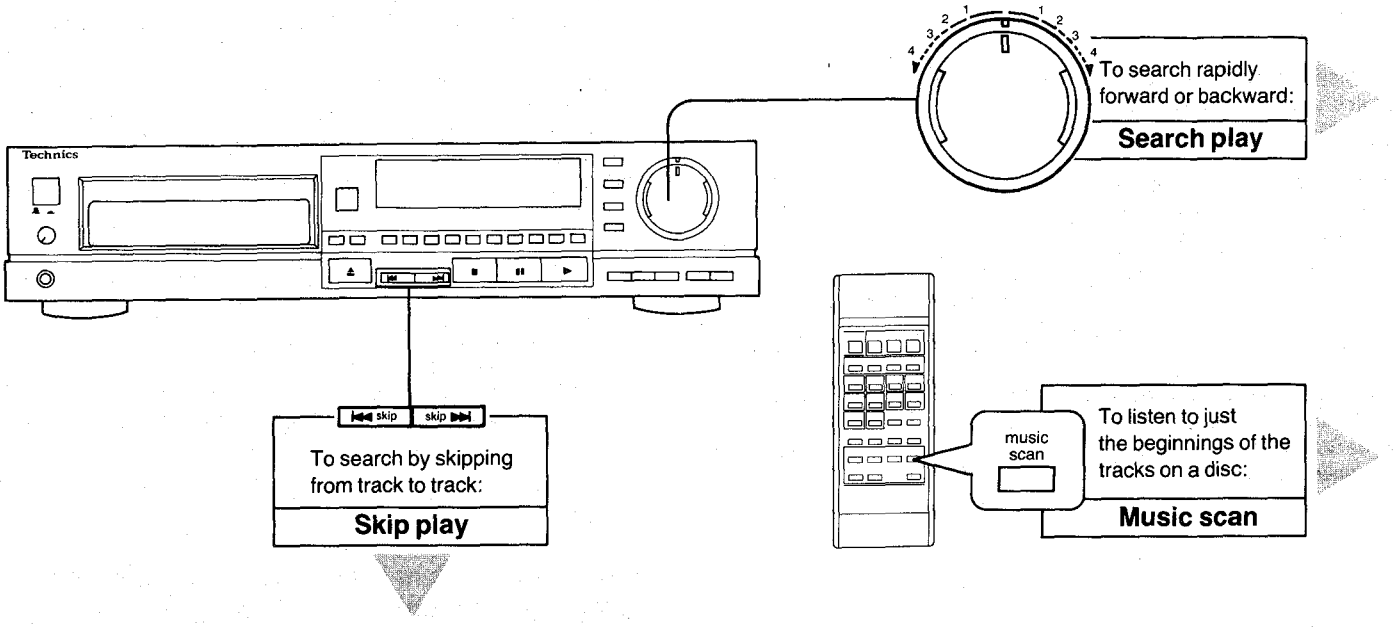
To temporarily stop disc play.

Press the pause button.



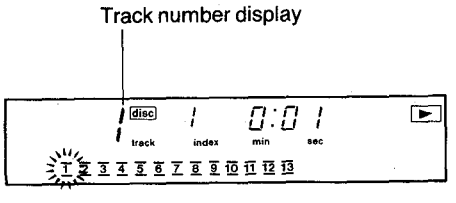
- Press the play button to play again.

■ SEARCH FUNCTIONS



Skip play

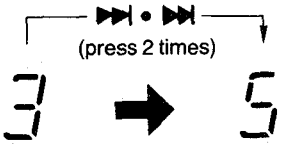
This function allows you to skip to the beginnings of tracks preceding or following the track in play and begins play immediately. It is a good idea to keep an eye on the track number display when using this function.



•To skip forward, press ▶▶| button.

The unit skips ahead one track each time the button is pressed.

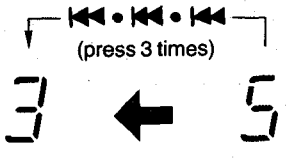
For example, to skip from track 3 to track 5:



•To skip backward, press |◀◀ button.

The first time the button is pressed, the unit skips back to the beginning of the track in play. Then it skips back one track for each additional press.

For example, to skip from track 5 to track 3 during play:

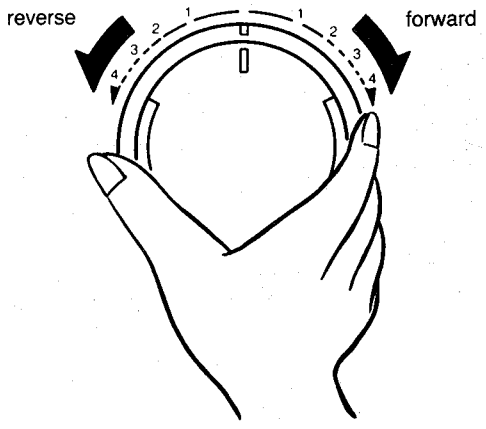


Helpful Hints:

- You can skip tracks when the unit is in the stop mode. Play begins automatically from the selected track.
- You can also skip tracks when the unit is in the pause mode. The unit skips to the track selected and remains in the pause mode.
- During play, you can skip to the specified track directly by using the numeric button. (During program play, this results in adding the programmed track.)

Search play

This function allows you to search rapidly forward or backward on the disc for specific sections with a high degree of accuracy while listening to the materials recorded on the disc.



- The further you turn the search dial, the faster the search speed becomes. Moving it back toward the center position slows it down. As you approach the point on the disc you wish to listen to, lower the search speed. When you reach the desired point, release the dial and play will begin from that exact point.

Search play speed approximately (four steps)

Operation mode / Scale	Play	Pause	
		Reverse	Forward
1	×8	×1/8	×1
2	×14	×1	×14
3	×27		
4	×76		

- On "3" or "4" scale position, the sounds from the unit are reduced.
- To search accurately, only in pause mode, the different search speeds are set up between "Forward" and "Reverse".

■ Using search function in the pause mode

When the search dial is released, the unit returns to the pause mode and the sound at that point is continuously played.

- To stop the sound, press the pause button again.

■ To search for specific sections using the remote control transmitter

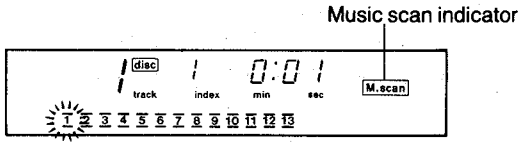
The ◀◀ button is for searching in a reverse direction and the ▶▶ button for searching in a forward direction. The search speed is slow when the button is pressed and becomes faster if you keep it pressed down. Release the button when you reach the desired point on the disc.

Music scan
(by the remote control transmitter only)

This function plays only the first 15 seconds of each track on the disc.
It is useful for locating tracks in a disc when you are not sure of the contents of tracks.

Press the music scan button on the remote control transmitter.

Music scan begins with playing the first 15 seconds of track 1.



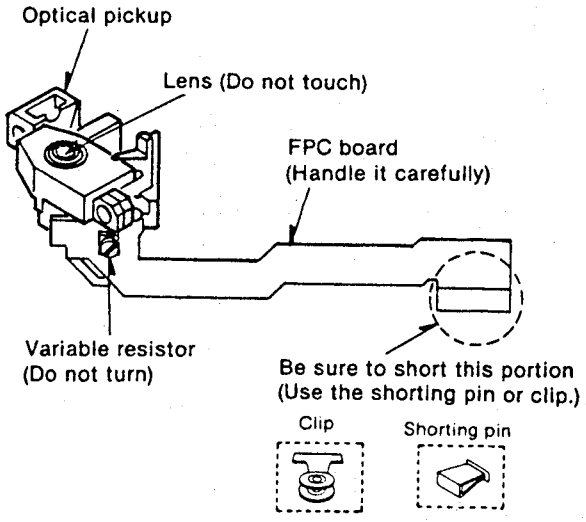
- Once the beginning sections of all the tracks on the disc have finished playing, music scan is canceled and normal play begins from track 1.

■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the optical pickup.

• Handling of optical pickup

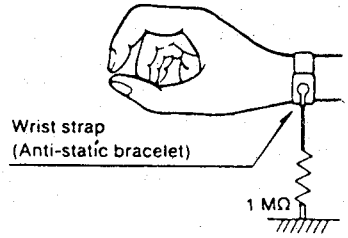
1. Do not give excessive shock to the optical pickup because it is of extremely precise structure.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board. (FPC board)
   When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board. (FPC board)
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

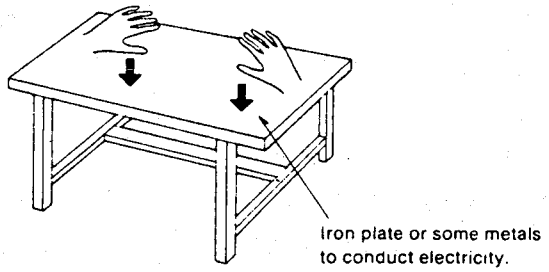


• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to relieve the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the optical pickup.



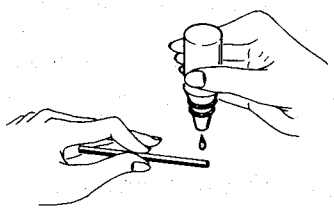


■ INSTRUCTIONS FOR TRAVERSE OIL (Part No. SZZ0L31)

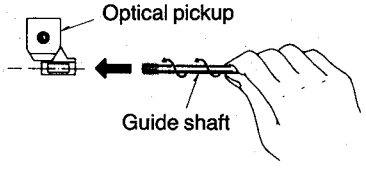
The container contains 6 g (approx. 3 ml) of oil, and one application (one shaft) requires 0.05 ml of oil.

How to Use

(1) Remove the guide shaft in the traverse deck from the optical pickup, and clean off any dust from the guide shaft.
(2) Apply one drop of the SZZ0L31 to the tip of the guide shaft.
(3) Hold the guide shaft so that its oiled end touches the optical pickup and insert it into the bearing while rotating it slowly.
(4) After securing the guide shaft, move the optical pickup by hand several times to the left and right to distribute the oil on the guide shaft.



図(1)

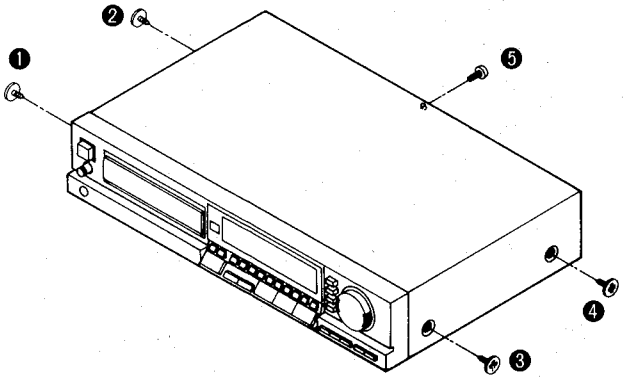


■ DISASSEMBLY INSTRUCTIONS

Warning: This product uses a laser diodes. Refer to caution statements on page 3.

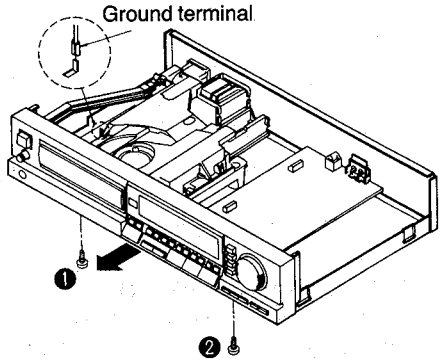
ACHTUNG:
- Die lasereinheit nicht zerlegen.
- Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

Ref. No. 1	Removal of the cabinet
Procedure 1	



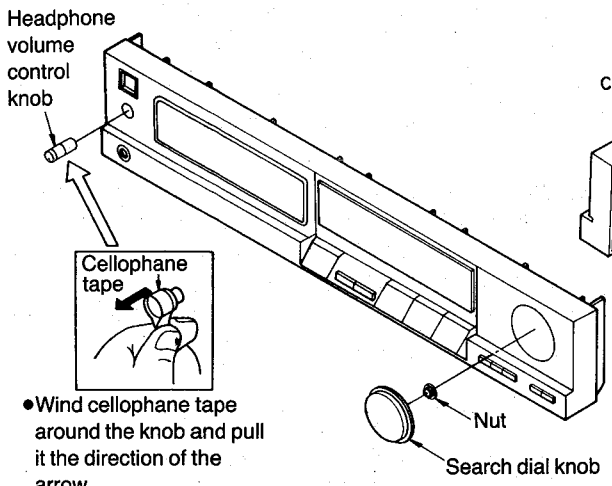
●Remove the 5 screws (❶~❺).

Ref. No. 2	Removal of the front panel
Procedure 1→2	

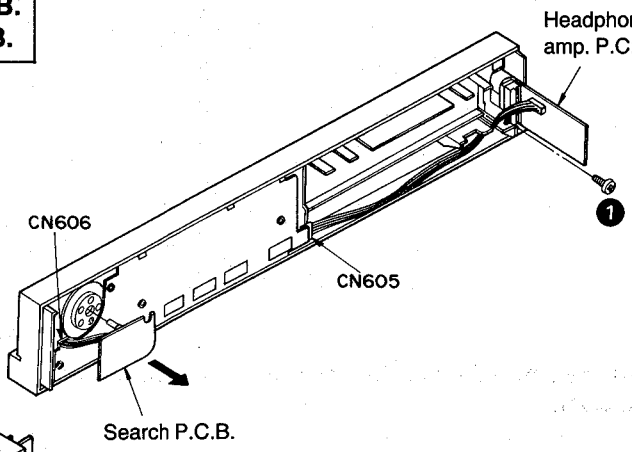


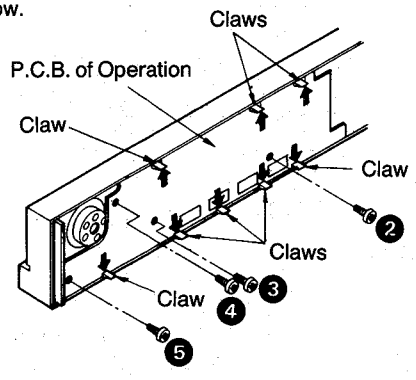
1. Remove the 2 screws (❶, ❷).
2. Release the ground terminal.
3. Remove the front panel in the direction of the arrow.

Ref. No. 3	Removal of headphone amp. P.C.B. search P.C.B. and operation P.C.B.
Procedure 1→2→3	



●Wind cellophane tape around the knob and pull it the direction of the arrow.





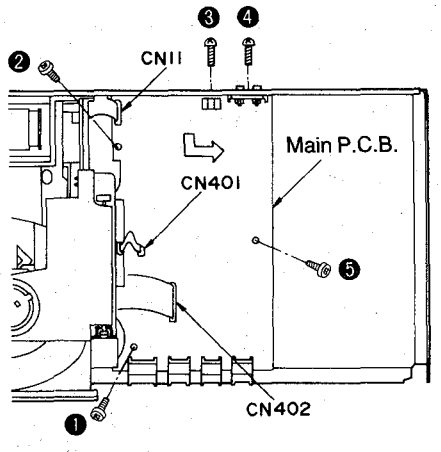
●Removal of the headphone amp. P.C.B.
1. Remove the headphone volume control knob.
2. Remove the screw (❶).
3. Remove the connector (CN605).

●Removal of the search P.C.B.
1. Remove the search dial knob and its nut.
2. Remove the connector (CN606).

●Removal of the operation P.C.B.
1. Remove the 4 screws (❷~❺).
2. Release the 8 claws in the direction of the arrows and remove the operation P.C.B.

Note: To remove the search dial knob, push it with a screwdriver through the front panel's back opening.

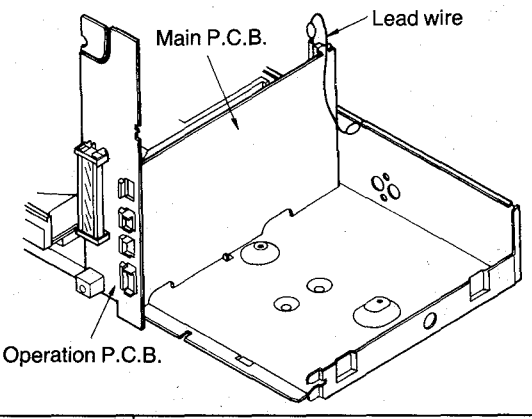
Ref. No. 4	Removal of the main P.C.B.
Procedure 1→2→3→4	



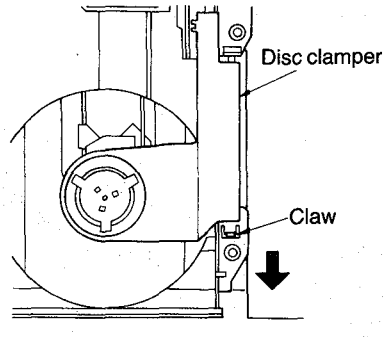
1. Remove the 5 screws (❶~❺).
2. Lift the main P.C.B. off the retention posts on the chassis.
3. Remove the main P.C.B. in the direction of the arrow.

How to check the main P.C.B.

- When checking the soldered surface of the main P.C.B. and replacing the parts, do as shown.
  1. Connect the main P.C.B. ground terminal (LINE OUT terminal) to the chassis with a lead wire.
  2. Connect the loading base grounding terminal to the chassis with a lead wire.
  3. Connect the operation P.C.B. ground terminal to the chassis with a lead wire.

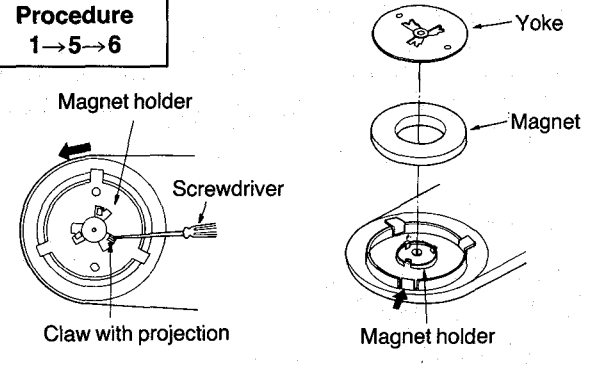


Ref. No. 5	Removal of the disc clamper
Procedure 1→5	



- Push the claw in the direction of the arrow and remove the disc clamper.

Ref. No. 6	Removal of the magnet and holder
Procedure 1→5→6	

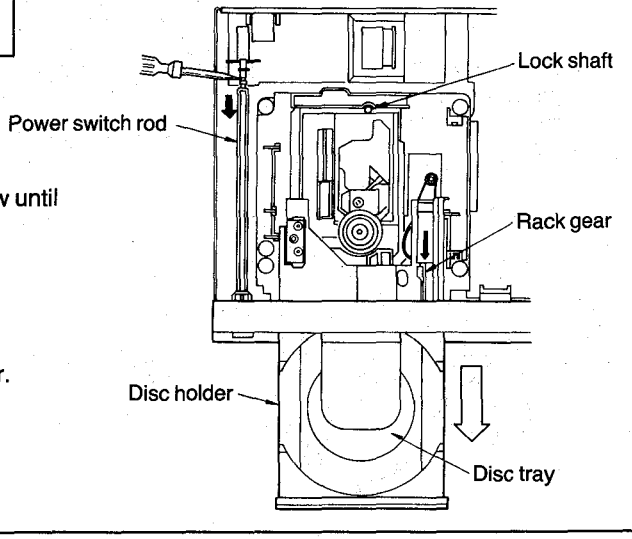


1. While lifting the claw with a screwdriver, rotate magnet holder in the direction of the arrow and remove the yoke and magnet.
2. Release the claws of the magnet holder.

Ref. No. 7	Removal of the disc holder and power switch rod
Procedure 1→5→7	

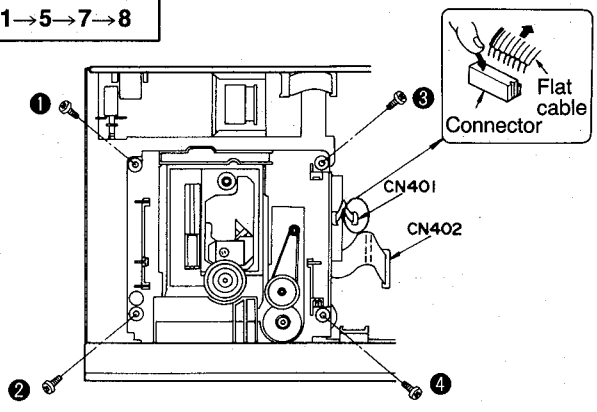
- **Removal of the disc holder**
  1. Push the rack gear slowly in the direction of the arrow until the disc tray comes up.
  2. Pull out the disc holder further to remove it.

  Note: Make sure to release the lock shaft.
- **Removal of the power switch rod.**
  1. Set the power switch to the "OFF" position.
  2. Remove the power switch rod by using a screwdriver.



Ref. No. 8	Removal of the loading base

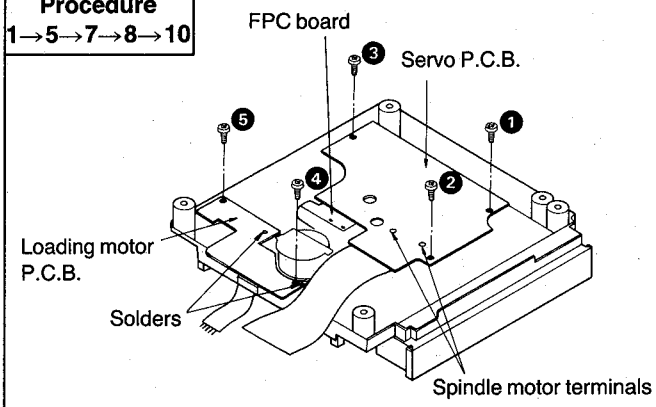
Procedure
1→5→7→8



1. Remove the 4 screws (❶~❹).
2. Remove the 2 flat cables (CN401. CN402).

Ref. No. 10	Removal of the servo P.C.B. and loading motor P.C.B.

Procedure
1→5→7→8→10



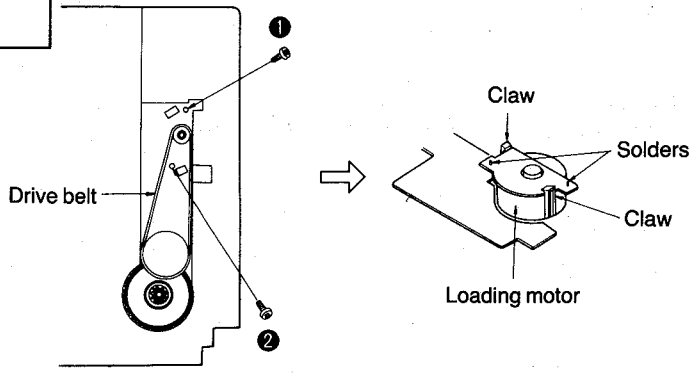
- **Removal of the servo P.C.B.**
  1. Remove the 3 screws (❶~❸).
  2. Unsolder the 2 terminals of spindle motor.
  3. Remove the FPC board from the optical pickup.

  Caution: To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board.
- **Removal of the loading motor P.C.B.**
  1. Remove the 2 screws (❹, ❺).
  2. Unsolder the 2 terminals of loading motor.

Ref. No. 11	Removal of the loading motor

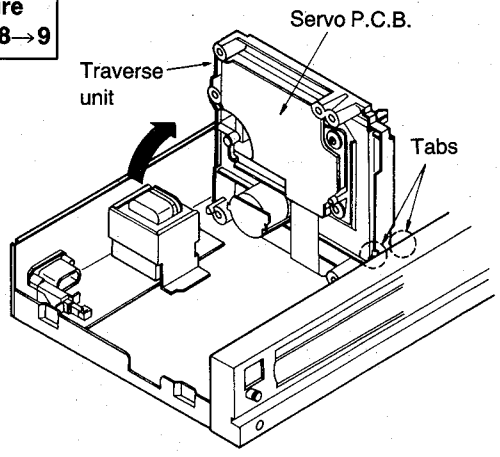
Procedure
1→5→7→8→11

1. Remove the drive belt.
2. Remove the 2 screws (❶, ❷).
3. Release the 2 claws.
4. Unsolder the 2 terminals of the lead wire of the loading motor.



Ref. No. 9	How to check the servo P.C.B.

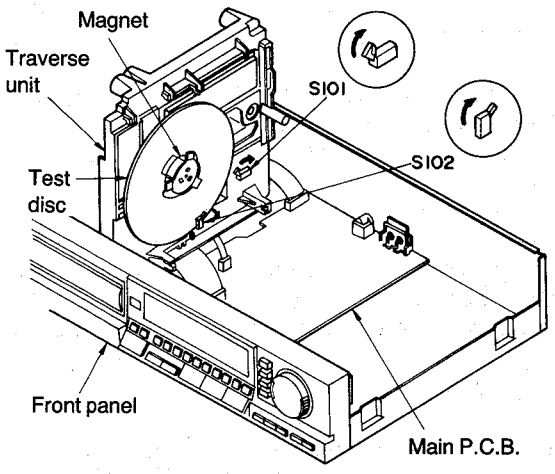
Procedure
1→5→7→8→9



- When checking the soldered surfaces of the servo P.C.B. and replacing the parts, do as shown.
- Flat cables (CN401 and CN402) should be left connected.

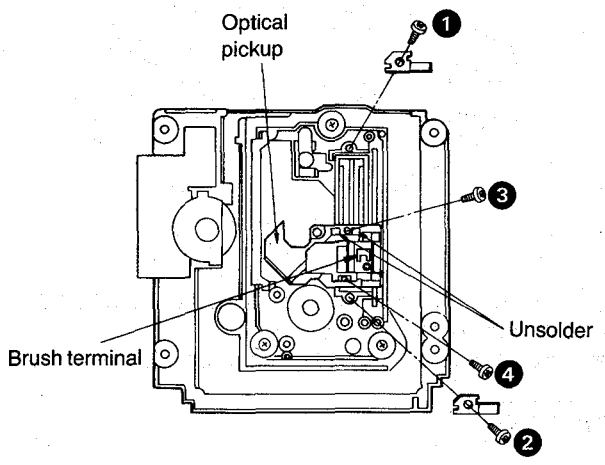
To play a disc

1. Place the test disc and magnet.
2. Switch the player on.
3. First push the Open/Close switch S102 in the direction of the arrow and then, within 4 seconds, push switch S101 in the direction of the arrow as shown in the figure.



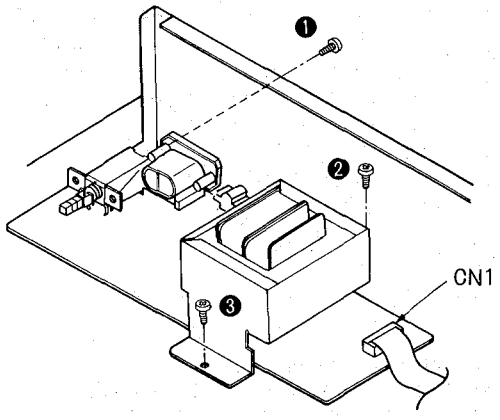
Ref. No. 12	Removal of the optical pickup
Procedure 1→5→7→8→ 10→12	**Refer to the handling precautions for optical pickup and instructions for traverse oil (See page 10).**

1. Remove the 2 screws (❶, ❷).
2. Unsolder the 2 terminals and the 2 screws (❸, ❹).



Caution: Take care not to touch the brush terminal.

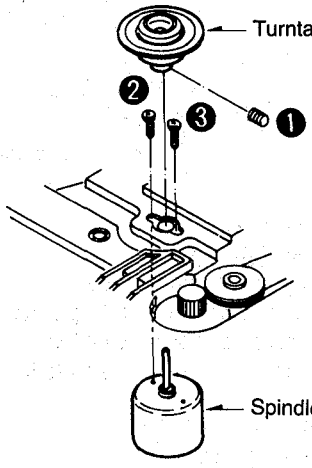
Ref. No. 13	Removal of the power supply P.C.B.
Procedure 1→5→7→13	



1. Remove the 3 screws (❶~❸).
2. Remove the flat cable (CN1).

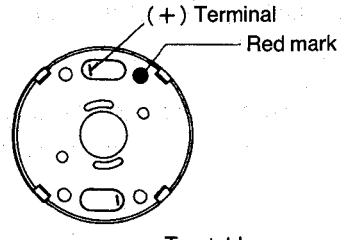
Ref. No. 14	Removal of the spindle motor
Procedure 1→5→7→8→ 10→14	

1. Loosen the screw (❶) by using a 1.27 mm allen wrench and remove the turntable.
2. Remove the 2 screws (❷, ❸).

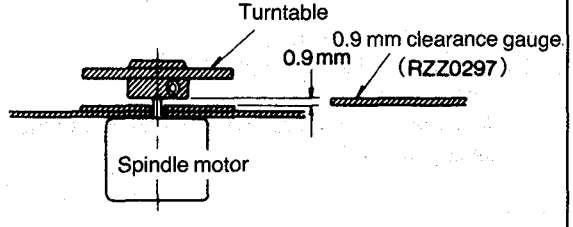


Caution:
1. Turntable height adjustment is necessary any time the turntable or spindle motor is replaced.
2. The (+) terminal of the spindle motor is indicated by the red mark.

Adjustment of turntable height
1. Insert a 0.9 mm clearance gauge (RZZ0297) between the turntable and loading base as shown in the figure.
2. Tighten the turntable set-screw by using a 1.27 mm allen wrench.



Caution:
Refer to turntable height adjustment (See page 16).

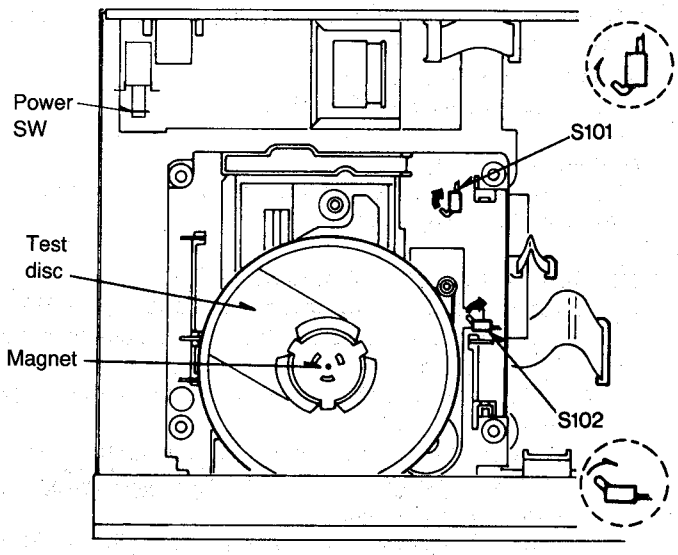


■ MEASUREMENTS AND ADJUSTMENTS

Caution:
- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pickup lens. Avoid exposure to the laser beam, especially when performing adjustments.

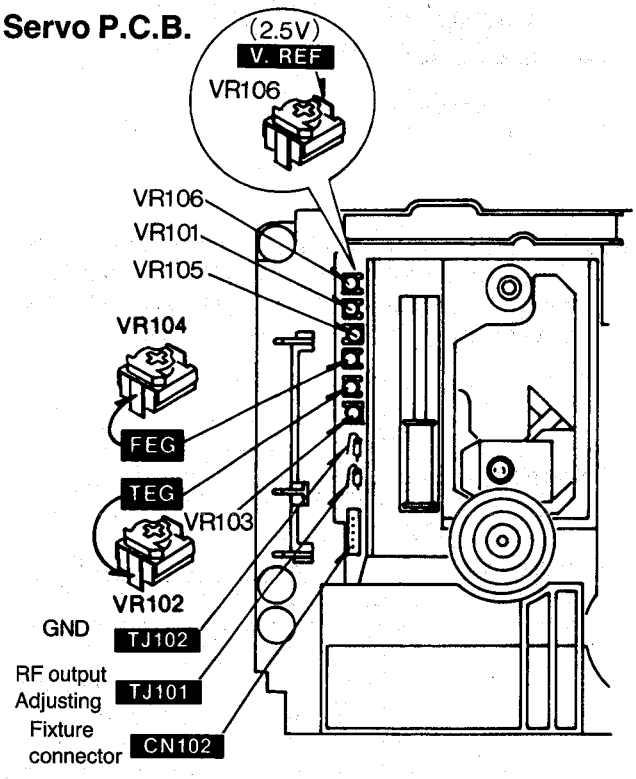
PREPARATION

1. Remove the cabinet (see Ref. No. 1 in disassembry instructions).
2. Remove the disc clamper and magnet (see Ref. No. 6 of the same).
3. Remove the disc holder and power switch rod (see Ref. No. 7 of the same).
4. Place the test disc and magnet on the turntable.
5. Switch the player on.
6. First push the Open/Close switch S102 in the direction of the arrow, and then, within 4 seconds, push switch S101 in the direction of the arrow as shown in the figure.

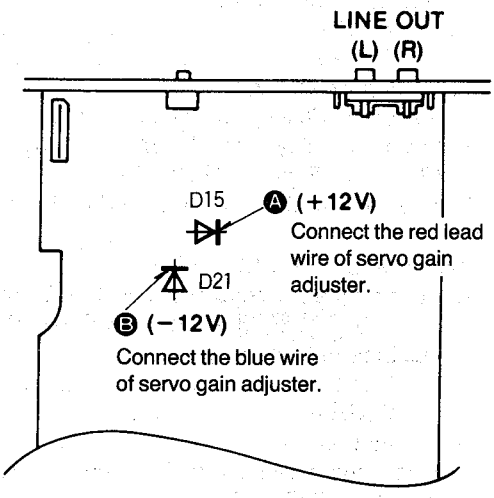


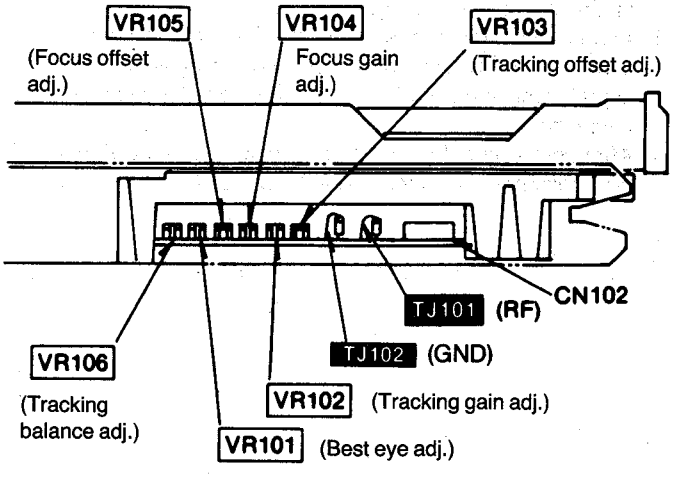
ADJUSTMENT POINTS

●Servo P.C.B.

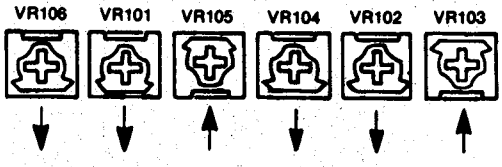


●Main P.C.B.





●Temporary setting of each VR



Temporary VR setting if any of the trimmer VRs are replaced or require readjustment, temporarily set them to the following positions.

Measuring Instruments and Special Tools

- Servo gain adjuster (SZZP1017F or SZZP1094C)
- Test discs
  1. Playability test disc (SZZP1054C or SZZP1014F)
  2. Uneven test disc (SZZP1056C)
  3. Black band test disc (SZZP1057C)
- Normal disc
- Dual-beam oscilloscope with bandwidth of 30 MHz or better (with EXT trigger and 1:1 probe).
- Audio frequency (AF) oscillator
- Conversion connector (SZZP1032F)
- Allen wrench (M2.0)
- Allen wrench (M1.27)
- 0.9 mm clearance gauge (RZZ0297)

As to the replacement of the following parts, refer to the specified sections for adjustment.

(1) Spindle motor ..... Sections (1), (3) to (8)
(2) Turntable ..... Sections (1), (3) to (8)
(3) Optical pickup ..... Sections (2) to (8)

Adjusting Procedure

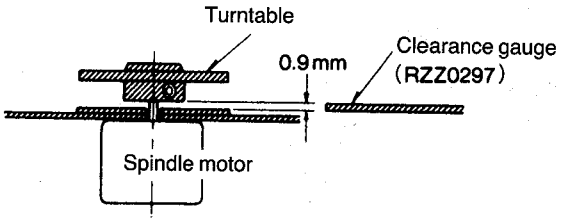
- If you have replaced the spindle motor or turntable, perform the following adjustment:

(1) TURNTABLE HEIGHT ADJUSTMENT

1. Insert the 0.9 mm clearance gauge (RZZ0297) between the turntable and the loading base (see the figure at right).
2. Tighten the turntable retention screw with the 1.27 mm allen wrench.
3. Connect the oscilloscope's CH. 1 probe across VR104's FEG (+) and VR106's V. REF (−) terminals via a filter.
   (Note: A voltage of 2.5 V appears at the V. REF terminal. Take care not to short the player's chassis to the oscil loscope ground.)
   Oscilloscope setting:
   VOLT ..... 50 mV
   SWEEP ..... 1 ms.
   Input coupling ..... DC
4. Adjust oscilloscope's DC zero balance.
5. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
6. Measure the DC level displayed on the oscilloscope.

Note 1. If the measured amplitude is within a range of +/− 15 mV, the turntable height is correct. If it is outside this range, adjust the turntable height by using the clearance gauge as a pry.

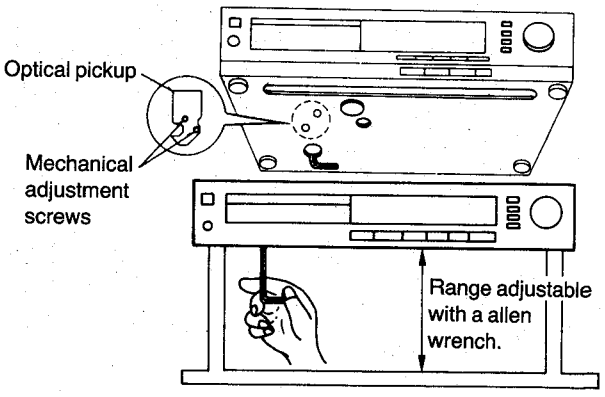
If the amplitude exceeds +15 mV, lower turntable.
If the amplitude is below −15 mV, elevate the turntable.

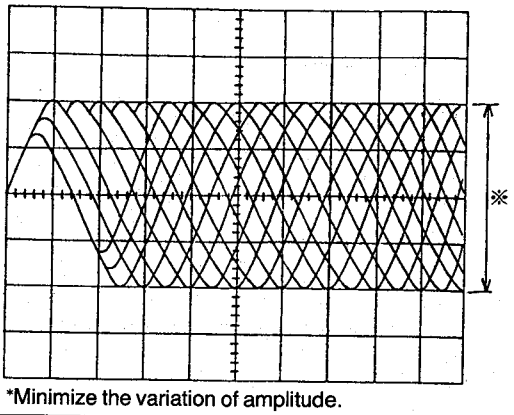


Note 2. If the measured amplitude greatly surpasses or falls short of the range above, set **VR105** at or around the center, then try to adjust the height again. (Then be sure to adjust the focus offset as well.)

(2) MECHANICAL ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across TJ101 (+) and TJ102 (−) on the Servo P.C.B.
   Oscilloscope setting:
   VOLT ..... 100 mV
   SWEEP ..... 0.5 µs.
   Input coupling ..... AC
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1056C).
3. Leave the player in Play mode and place it as shown in the figure on the right.
4. Alternately adjust the two mechanical adjusting screws with the 2.0 mm allen wrench until the RF signal amplitude variation on the oscilloscope is minimized.
5. After completing the adjustment, lock the **mechanical adjustments** with lock paint (RZZOL01).

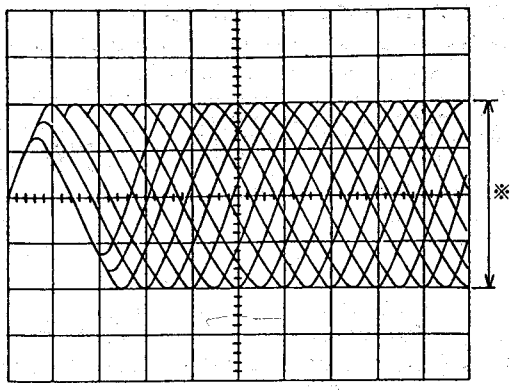




*Minimize the variation of amplitude.

(3) BEST EYE (PD BALANCE) ADJUSTMENT

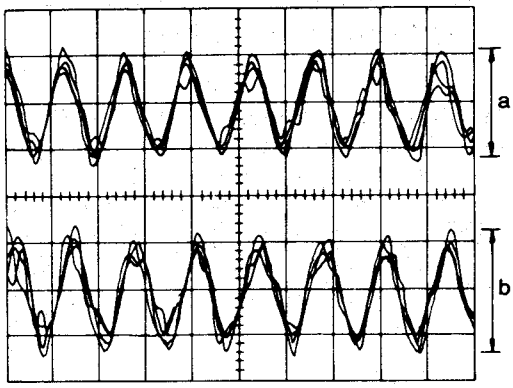
1. Connect the oscilloscope's CH. 1 probe across TJ101 (+) and TJ102 (−) on the Servo P.C.B.
   Oscilloscope setting:
   VOLT ..... 200 mV
   SWEEP ..... 0.5 µs.
   Input coupling ..... AC
2. Switch the player power **ON**, and play the 0.5 mm black dot on the test disc (SZZP1014F or SZZP1054C).
3. Adjust **VR101** until the RF signal eye pattern amplitude is maximized.



*Maximize the amplitude.

(4) FOCUS GAIN ADJUSTMENT

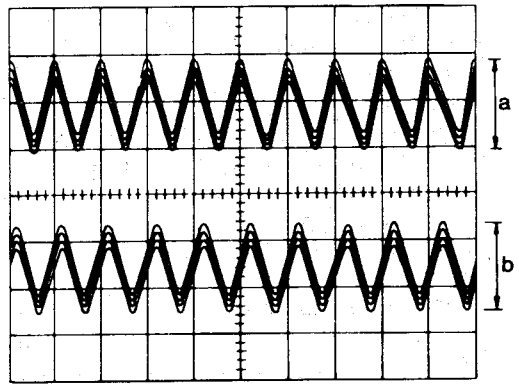
1. Connect the servo gain adjuster to the player (see page **19**).
2. Set the servo gain adjuster's gain switch to position **"2"** and the ON/OFF switch to **ON**.
3. Set up the AF oscillator output for **825 Hz, 150 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
4. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively
   (TP3 is GND).
   Oscilloscope setting:
   VOLT ..... 100 mV (both channels)
   SWEEP ..... 1 msec.
   Input coupling ..... AC
5. Play the test disc (SZZP1014F or SZZP1054C).
6. Set the servo gain adjuster's gain switch to position **"3"**, and you will see a 825 Hz signal on the oscilloscope. Adjust **VR104** until the signal amplitudes on both channels become identical to each other.
7. Set the gain switch back to position **"2"**.



*Adjust **VR104** until a equals b.

(5) TRACKING GAIN ADJUSTMENT

1. Set up the AF oscillator output for **1.1 kHz, 150 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
2. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively
   (TP3 is GND).
   Oscilloscope setting:
   VOLT ..... 100 mV (both channels)
   SWEEP ..... 1 msec.
   Input coupling ..... AC
3. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
4. Set the servo gain adjuster's gain switch to position **"1"**, and you will see a 1.1 kHz signal on the oscilloscope. Adjust **VR102** until the signal amplitudes on both channels become identical to each other.
5. Set the gain switch back to position **"2"**.

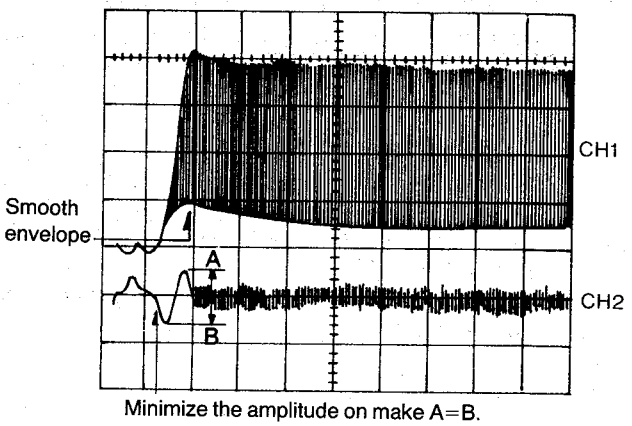


*Adjust **VR102** until a equals b.

(6) FOCUS OFFSET ADJUSTMENT

Note: Make sure that the servo gain adjuster's gain switch is set to position **"2"**.

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B. and its CH. 2 probe (+) to VR104's **FEG** terminal.
   Oscilloscope setting:
   VOLT ..... 100 mV (CH. 1)
   100 mV (CH. 2)
   SWEEP ..... 0.5 ms.
   Input coupling ..... AC (both CH. 1 and 2)
   Trigger mode ..... NORM (trigger CH. 1)
2. Switch the player power **ON**, and play the **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR105** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH.2 is minimized, i.e. when amplitude A equals amplitude B.

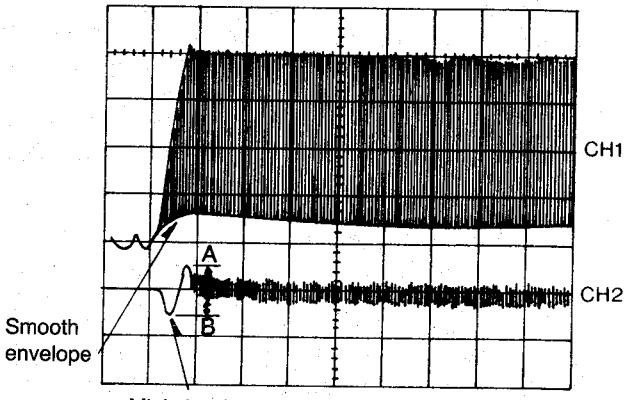


Minimize the amplitude on make A=B.

(7) TRACKING OF OFFSET ADJUSTMENT

Note: Make sure that the servo gain adjuster's gain switch is set to position **"2"**.

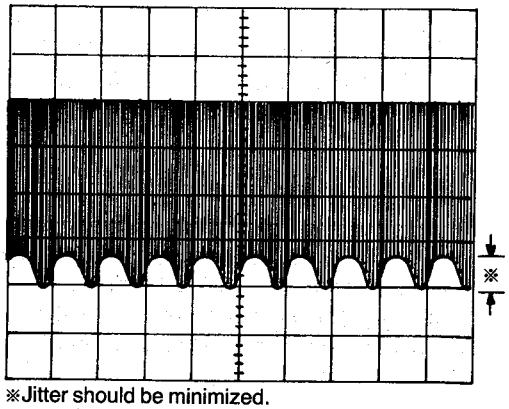
1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B. and its CH. 2 probe (+) to VR102's **TEG** terminal.
   Oscilloscope setting:
   VOLT ..... 100 mV (CH. 1)
   200 mV (CH. 2)
   SWEEP ..... 0.5 ms.
   Input coupling ..... AC (both CH. 1 and 2)
   Trigger mode ..... NORM (trigger CH. 1.)
2. Switch the player power **ON**, and play rack **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR103** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



Minimize the amplitude on make A=B.

(8) TRACKING BALANCE ADJUSTMENT

1. Make sure that servo gain adjuster's gain switch is set to position **"2"**.
2. Set up the AF oscillator output for **1.1 kHz, 600 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
3. Connect oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B. and CH. 2 probe (+) to the OSC terminal on the servo gain adjuster.
   Oscilloscope setting:
   VOLT ..... 100 mV (CH. 1)
   SWEEP ..... 0.5 msec.
   Input coupling ..... AC (both CH. 1 and 2)
   Trigger mode ..... NORM (trigger CH. 2)
4. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
5. Set the servo gain adjuster's gain switch to position **"1"**, and adjust **VR106** until the jitter contained in the signal waveform on CH. 1 is minimized as shown below.
6. Disconnect the servo gain adjuster's leads from the player.



※Jitter should be minimized.

(9) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

***Checking Skip Search**

1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

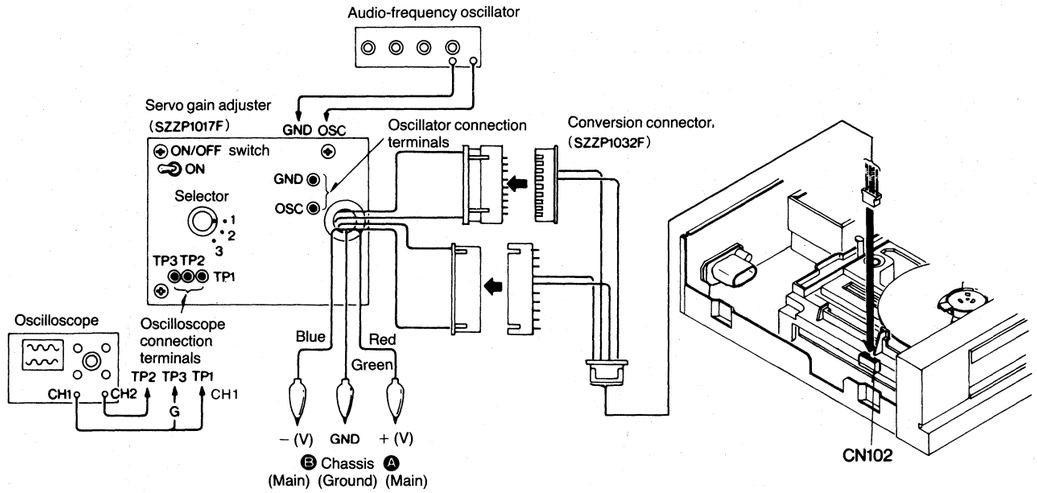
***Checking Manual Search**

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

***Checking Using Defect Disc**

1. Play the 0.7 mm black dot and the 0.7 mm wedge on the defect test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc and verify that no sound skip or noise occurs.

•Connection of servo gain adjuster



■ NEW SERVO GAIN ADJUSTER (Servo Amp. Adjusting Fixture)

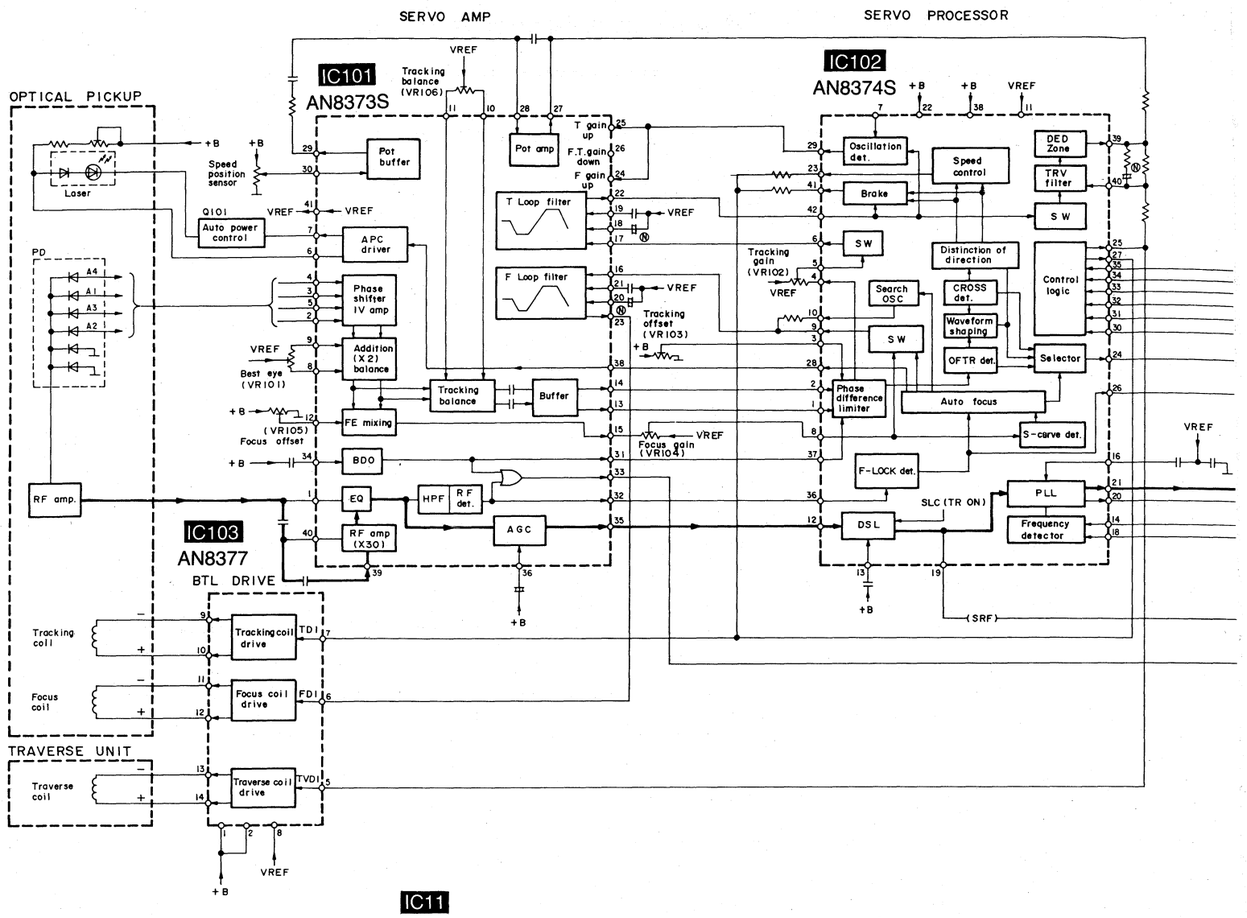
The following introduces the improved version of the current servo gain adjuster (SZZP1017F):

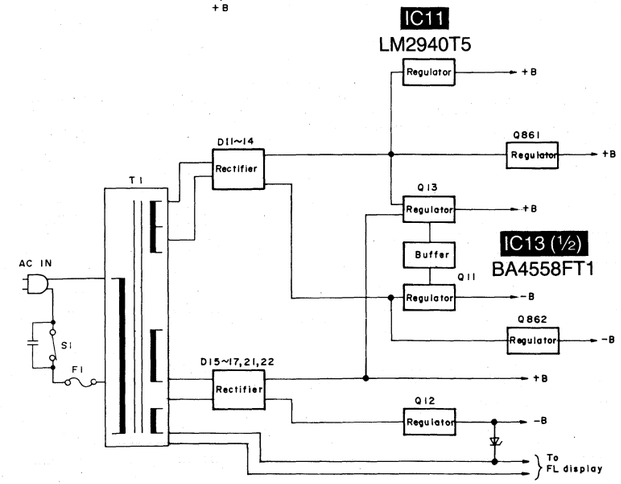
Part number: SZZP1094C

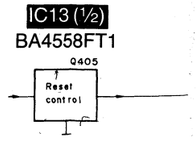
Features:

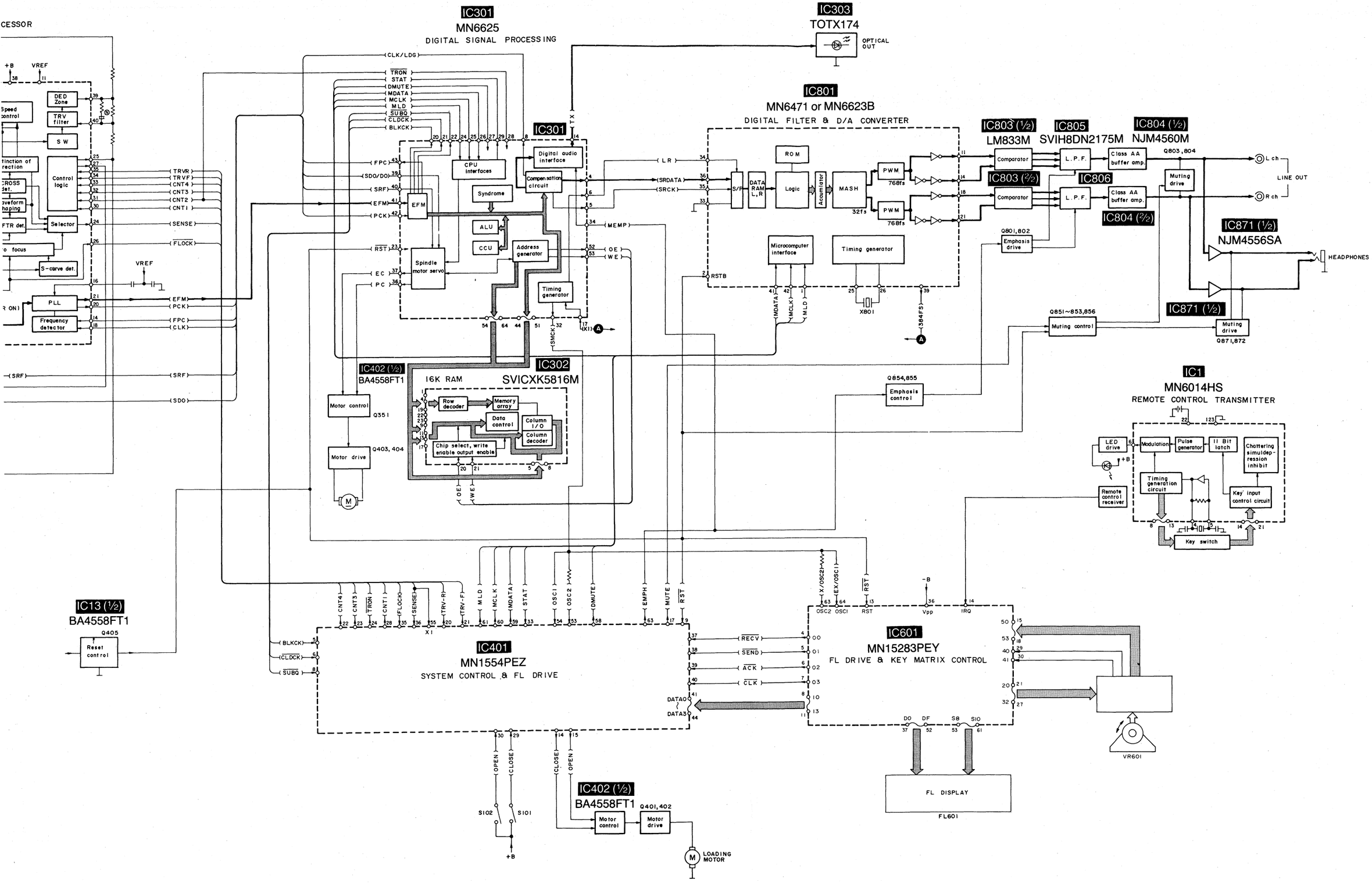
(1) Contains all oscillation frequencies and output adjustments needed for focus servo gain, tracking servo gain, and tracking balance adjustment (requires no external oscillator).
(2) Panel indicators indicate the best points of focus and tracking servo gains (no oscilloscope needed).
(3) Internal power supply eliminates the need for power supply from the CD player.

■ BLOCK DIAGRAM



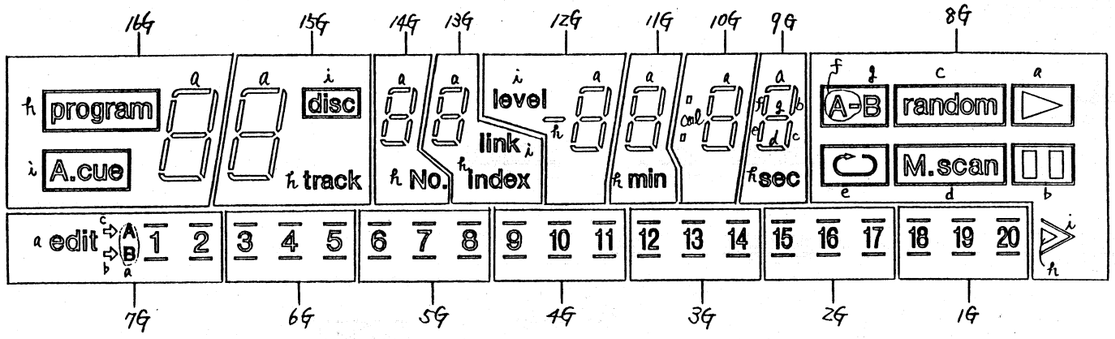





IC301
MN6625
DIGITAL SIGNAL PROCESSING
IC303
TOTX174
OPTICAL OUT
IC801
MN6471 or MN6623B
DIGITAL FILTER & D/A CONVERTER
IC803 (1/2)
LM833M
IC805
SVIH8DN2175M
IC804 (1/2)
NJM4560M
IC803 (2/2)
IC806
IC804 (2/2)
IC871 (1/2)
NJM4556SA
HEADPHONES
LINE OUT
L ch
R ch
IC871 (1/2)
IC1
MN6014HS
REMOTE CONTROL TRANSMITTER
IC402 (1/2)
BA4558FT1
IC302
16K RAM
SVICXK5816M
IC13 (1/2)
BA4558FT1
IC401
MN1554PEZ
SYSTEM CONTROL & FL DRIVE
IC601
MN15283PEY
FL DRIVE & KEY MATRIX CONTROL
IC402 (1/2)
BA4558FT1
FL DISPLAY
FL601
VR601
LOADING MOTOR
Motor control
Motor drive
Reset control
Emphasis control
Muting control
Muting drive
Emphasis drive
Comparator
L.P.F.
Class AA buffer amp.
Digital audio interface
Compensation circuit
CPU interfaces
Syndrome
EFM
ALU
CCU
Address generator
Spindle motor servo
Timing generator
Control logic
Selector
PLL
Frequency detector
DED Zone
TRV filter
S W
S-curve det.
Micracomputer interface
ROM
Logic
Accumulator
MASH
PWM
S/P
DATA RAM L,R
Row decoder
Memory array
Data control
Column I/O
Column decoder
Chip select, write enable output enable
LED drive
Modulation
Pulse generator
11 Bit latch
Chattering simuldepression inhibit
Timing generation circuit
Key input control circuit
Key switch
Remote control receiver
SIO2
SIO1
OPEN
CLOSE
+B
-B
X1
Q405
Q351
Q403, 404
Q401, 402
Q801, 802
Q803, 804
Q851~853, 856
Q854, 855
Q871, 872

■ DESCRIPTION OF FL PANEL

●GRID ASSIGNMENT



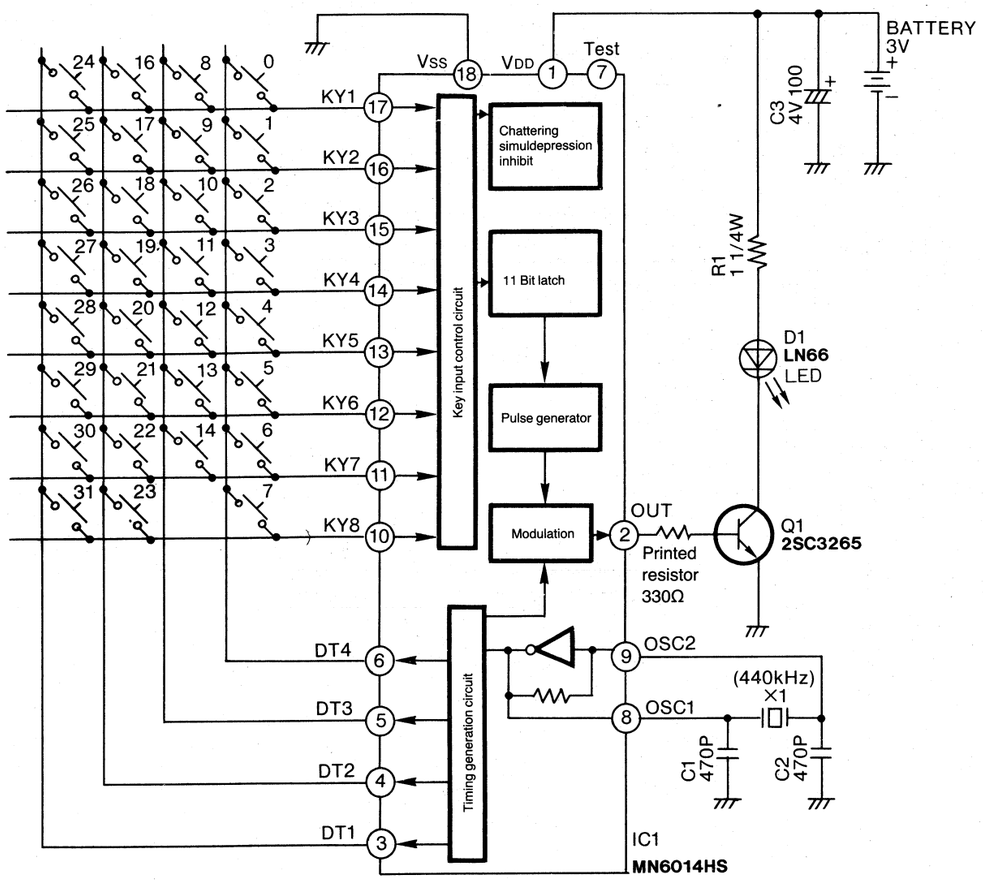
●PIN CONNECTION

42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
F 2	F 2	N P	a	b	c	d	N P	N P	N P	e	f	g	h	i	16 G	15 G	14 G	13 G	N P	N P	N P	N P	12 G	11 G	10 G	9 G	8 G	7 G	6 G	5 G	4 G	N P	N P	N P	N P	3 G	2 G	1 G	N P	F 1	F 1

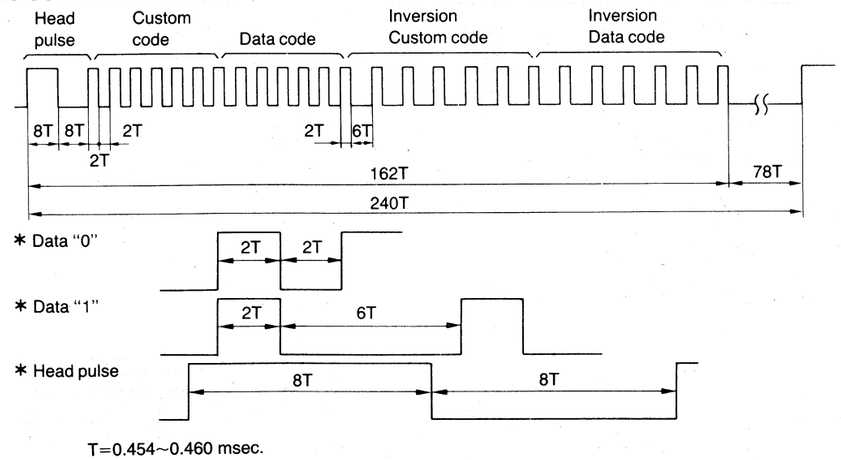
●ANODE CONNECTION

	16G	15G	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	a	a	a	a	a	a	a	a	▶	edit A/B	3	6	9	12	15	18
b	b	b	b	b	b	b	b	b	❚❚	⇨(L)	3	6	9	12	15	18
c	c	c	c	c	c	c	c	c	random	⇨(H)	3	6	9	12	15	18
d	d	d	d	d	d	d	d	d	M.scan	1	4	7	10	13	16	19
e	e	e	e	e	e	e	e	e	↻	(L) 1	4	7	10	13	16	19
f	f	f	f	f	f	f	f	f	A–	(H) 1	4	7	10	13	16	19
g	g	g	g	g	g	g	g	g	B	2	5	8	11	14	17	20
h	program	track	No.	index	—	min	col	sec	▶	(L) 2	5	8	11	14	17	20
i	A.cue	disc	-	link	level	-	-	-	>	(H) 2	5	8	11	14	17	20

●Remote control unit



●Remote control data code



■ SCHE

(This schematic

●S1:
●S2:
●S101, S102:
●S601:
●S602, S603:
●S604:
●S605:
●S606:
●S607~S618:

●S619:
●S620:
●S621:
●S622:
●S623:
●S624:
●S625:
●S626:
●S627:

●The voltage va
oscilloscope or
Accordingly, th
the measuring
*The parenthes
stop mode.

●Important safet
Components ic
use only manu

—≺ ≻— : Pc

*Caution!
IC and LSI are s
Secondary trou
*Cover the parts
*Ground the solc
*Put a conductiv
*Do not touch th

Key No.	
0	play
1	skip
2	4
3	8
4	0
5	time
6	mus
7	auto
8	pau
9	|◀◀
10	3
11	7
12	+10
13	reca
14	ranc
16	stop

■ SCHEMATIC DIAGRAM (parts list on page 47~50.)

(This schematic diagram may be modified at any time with the development of new technology.)

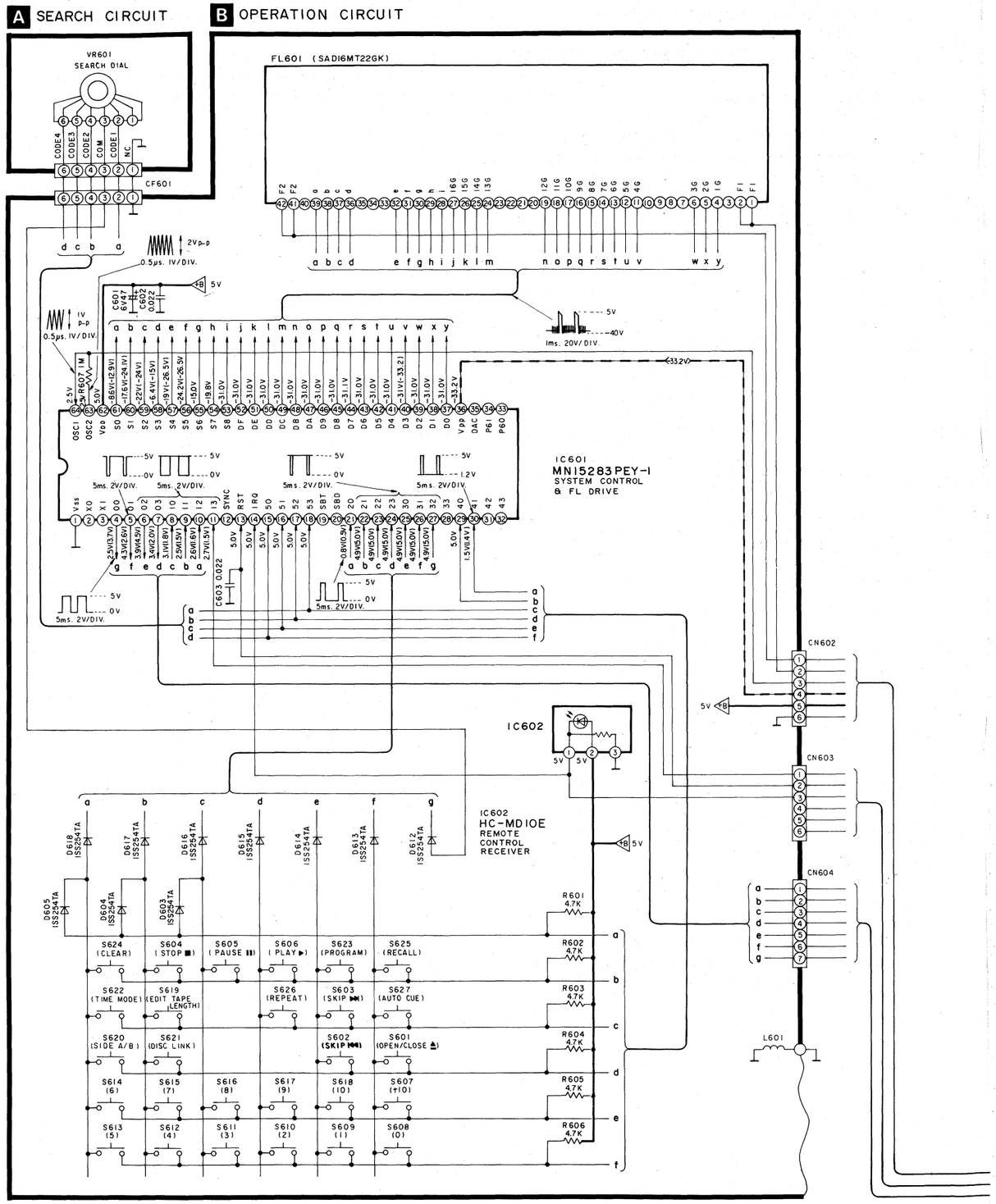
- **●S1:** Power switch
- **●S2:** Voltage selector switch (For [XA], [XB], [PA] [PE] and [PC] areas)
- **●S101, S102:** Disc holder open/close detection switches
- **●S601:** Disc holder open/close switch
- **●S602, S603:** Skip switches **(S602; |◀◀, S603; ▶▶|)**
- **●S604:** Stop switch
- **●S605:** Pause switch
- **●S606:** Play switch
- **●S607~S618:** Numeric switches **(S607; +10, S608; 0, S609; 1, S610; 2, S611; 3, S612; 4 S613; 5, S614; 6, S615; 7, S616; 8, S617; 9, S618; 10**
- **●S619:** Edit tape length switch
- **●S620:** Tape-side select switch
- **●S621:** Disk link switch
- **●S622:** Time mode select switch
- **●S623:** Programmed-play switch
- **●S624:** Clear switch
- **●S625:** Recall switch
- **●S626:** Repeat switch
- **●S627:** Auto cue switch

●The voltage value and waveform are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.
Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the taster or the measuring unit.
*The parenthesized are the values of voltage generated during playing (Test disc 1 kHz, L+R, 0 dB), others are voltage values in stop mode.

●Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
—≺ ≻—: Positive voltage lines. --≺ ≻--: Negative voltage lines. ⟿: Audio signal lines.

***Caution!**
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
*Cover the parts boxes made of plastics with aluminum foil.
*Ground the soldering iron.
*Put a conductive mat on the work table.
*Do not touch the legs of IC or LSI with the fingers directly.

Key No.	Function	Custom Code	Data Code	Key No.	Function	Custom Code	Data Code
0	play	01100	001010	17	search ▶▶	01100	000101
1	skip ▶▶|	01100	000011	18	2	01100	010001
2	4	01100	010011	19	6	01100	010101
3	8	01100	010111	20	10	01100	110000
4	0	01100	011001	21	clear	01100	001011
5	time mode	01100	101001	22	repeat	01100	000111
6	music scan	01100	001111	23	▲ level	01100	100100
7	auto cue	01100	100011	24	open/close	01100	001110
8	pause	01100	000110	25	◀◀ search	01100	000100
9	|◀◀ skip	01100	000010	26	1	01100	010000
10	3	01100	010010	27	5	01100	010100
11	7	01100	010110	28	9	01100	011000
12	+10	01100	011010	29	program	01100	011101
13	recall	01100	001001	30	A–B repeat	01100	001000
14	random	01100	011111	31	▼ level	01100	100101
16	stop	01100	000000				



21 22 23 24 25 26 27 28 29 30 31 32 33 34

C SERVO CIRCUIT

Note: Original circuit uses AN8377 for IC103 While the new circuit uses AN8377N for IC103. (Refer to the table below for other changes.)

IC103 Modifications	AN8377	AN8377N
IC104	LM2840T5M	Removed
Q102	Removed	2SB1240QH Added
C140	0.01µF	Removed
C145	6V 100µF	Removed
Jumper SJ101	Removed	Shorted

OPTICAL PICKUP

OPTICAL PICKUP

SPEED POSITION SENSOR

(TRAVERSE) (FOCUS) (TRACKING)

CN101

Audio signal lines

Q101 2SA1547 AUTO POWER CONTROL

IC103 AN8377 FOCUS/TRACKING /TRAVERSE COIL DRIVE (BTL DRIVE)

IC104 LM2940T5M REGULATOR

Q102 2SB1240 SWITCHING

IC102 AN8374S SERVO PROCESSOR

IC101 AN8373S SERVO AMP

CN103

DC SPINDLE MOTOR

Best eye adj

Tracking balance adj

Focus offset adj

Tracking gain adj

Focus gain adj

TEG

FEG

V.REF

CN102

To servo Gain Adjuster

Tracking offset adj

D MOTOR/ SWITCH CIRCUIT

LOADING MOTOR

(OPEN/ CLOSE DETECTOR)

S101

S102

CN701

CN401

E MAIN CIRCUIT

Q401 2SD1862QRTV3 MOTOR DRIVE

Q402 2SB1240QRTV6 MOTOR DRIVE

IC402(1/2)

IC402 BA4558FTI MOTOR DRIVE

Q301 DTC124EST SWITCHING

IC401 MN1554PEZ-1 SYSTEM CONTROL

IC301 MN6625 DIGITAL SIGNAL PROCESSING

Q403 2SD1862QRTV3 MOTOR DRIVE

Q404 2SB1240QRTV6 MOTOR DRIVE

Q302 DTA124EST SWITCHING

IC402 (1/2)

CN402

CN412

CN413

CN414

TJ301

TJ302

IC302

29 30 31 32 33 34 35 36 37 38 39 40 41 42

D MOTOR/ SWITCH CIRCUIT

E MAIN CIRCUIT

F POWER SU For [E], [EG

G HEADPHONE

B

LOADING MOTOR

S101

S102

(OPEN/ CLOSE DETECTOR)

CN701

CN401

CN402

CN103

DC SPINDLE MOTOR

To servo Gain Adjuster

CN102

CN412

CN413

CN414

Q401 2SD1862QRTV3 MOTOR DRIVE

Q402 2SB1240QRTV6 MOTOR DRIVE

IC402(1/2)

IC402 (1/2)

IC402 BA4558FTI MOTOR DRIVE

Q403 2SD1862QRTV3 MOTOR DRIVE

Q404 2SB1240QRTV6 MOTOR DRIVE

Q302 DTA124EST SWITCHING

Q301 DTC124EST SWITCHING

TJ301

TJ302

IC401 MN1554PEZ-1 SYSTEM CONTROL

IC301 MN6625 DIGITAL SIGNAL PROCESSING

IC302 SVICXK586IM 16K RAM

IC13 (1/2)

IC13 BA4558FTI RESET/STABILIZER

Q405 DTC124EST RESET

Q854 DTC124EST SWITCHING CONT.

Q855 DTA124EST SWITCHING CONT.

Q12 2SB1238QSTV3 REGULATOR

Q13 2SD1862QRTV3 REGULATOR

Q11 2SB1240QRTV6 REGULATOR

IC11 LM2940T5M REGULATOR

IC11,12 SRUN15T

Q851 DTA124EST MUTING CONT.

Q853 DTA114EST MUTING CONT.

Q852 DTC124EST MUTING CONT.

Q862 2SA1309QRSTA REGULATOR

Q861 2SC3311QRSTA REGULATOR

Q801 Q802

IC801 MN6471 (For EG, PA, PE, PC Areas) MN6623B (For others) DIGITAL FILTER/ D/A CONVERTER

IC803 LM833M BUFFER AMP.

IC803 (2/2)

IC804 (1/2)

IC804 (2/2)

IC804 NJM4560M BUFFER AMP

Q801, 802 2SC3311QRSTA SWITCHING (EMPHASIS)

IC805

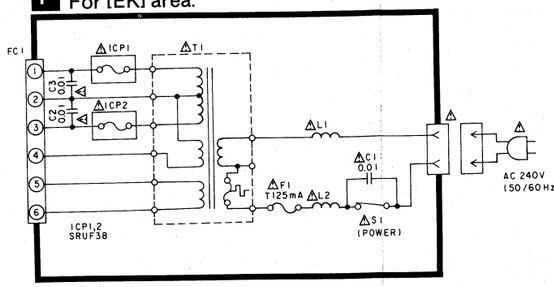
IC806

Audio signal

37 38 39 40 41 42 43 44 45 46 47 48 49

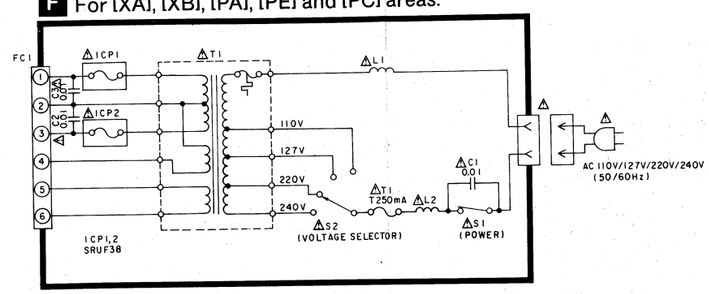
F POWER SUPPLY CIRCUIT
For [E], [EG], [EB], [EH], [EF], [EI], and [XL] areas.

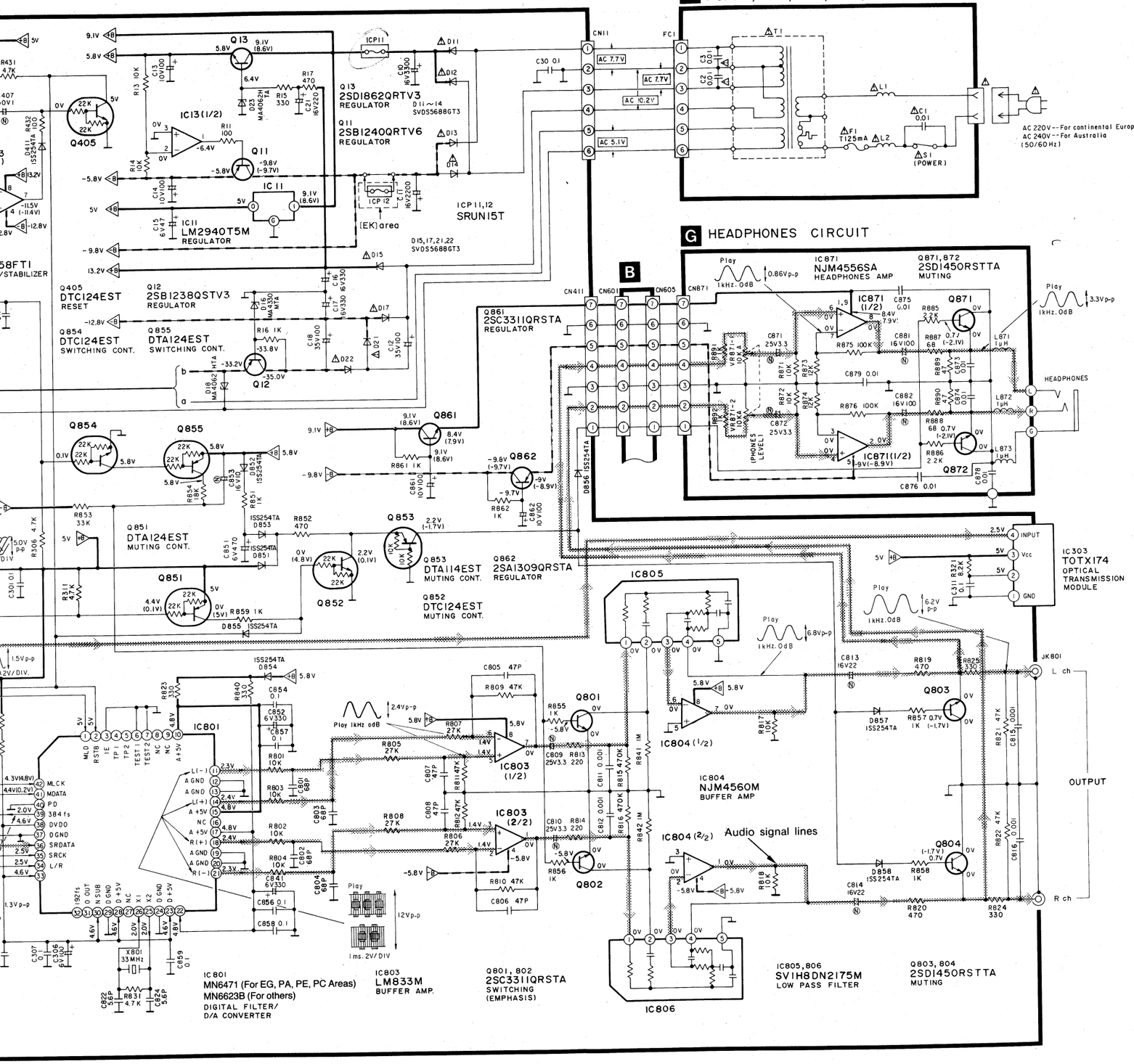
F POWER SUPPLY CIRCUIT
For [EK] area.



G HEADPHONES CIRCUIT

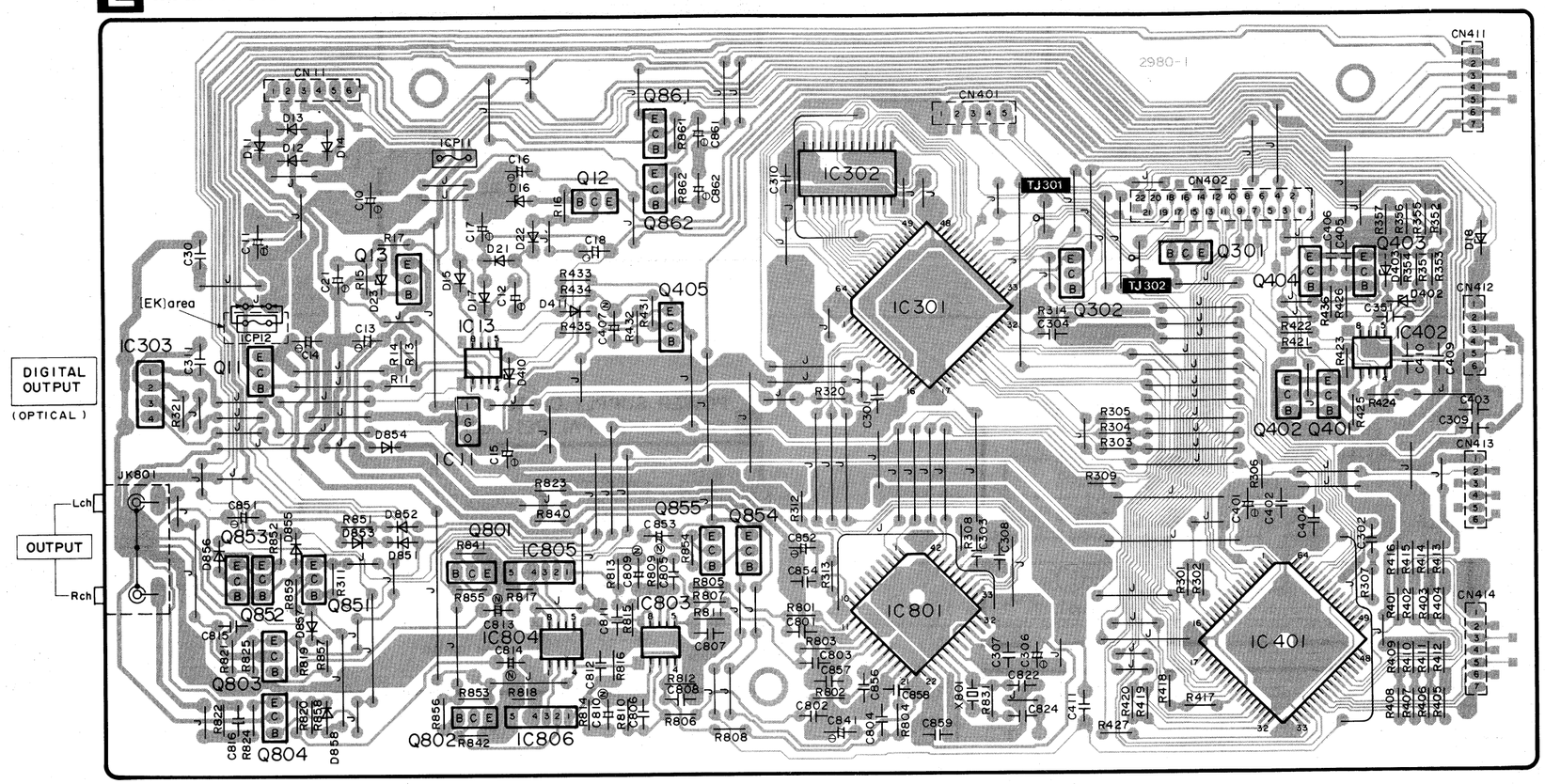
F POWER SUPPLY CIRCUIT
For [XA], [XB], [PA], [PE] and [PC] areas.



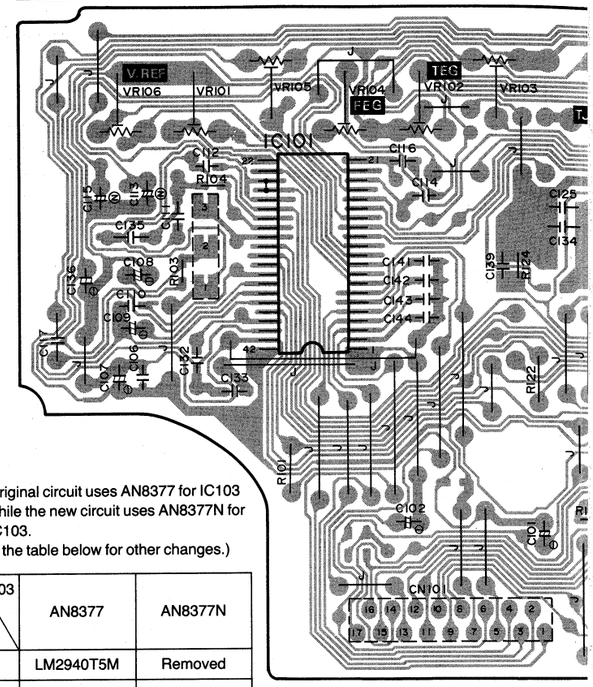


■ PRINTED CIRCUIT BOARDS

E MAIN P.C.B.



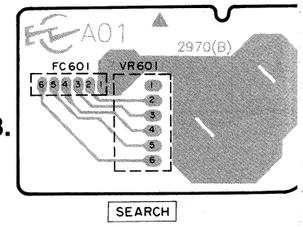
C SERVO P.C.B.



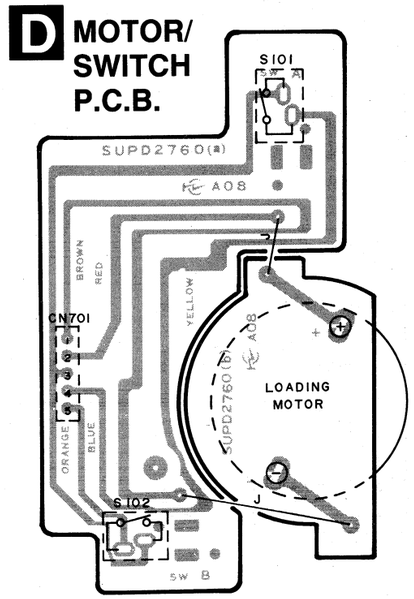
Note: Original circuit uses AN8377 for IC103 while the new circuit uses AN8377N for IC103.
(Refer to the table below for other changes.)

IC103 / Modifications	AN8377	AN8377N
IC104	LM2940T5M	Removed
Q102	Removed	2SB1240QR Added
C140	0.01 µF	Removed
C145	6 V 100 µF	Removed
Jumper SJ101	Removed	Shorted

A SEARCH P.C.B.

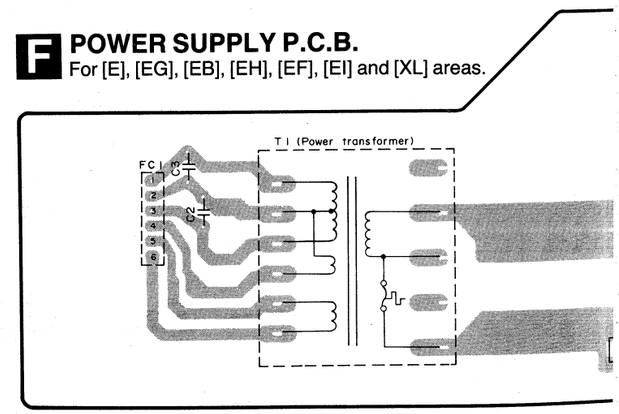


D MOTOR/ SWITCH P.C.B.



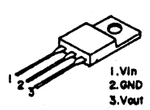
F POWER SUPPLY P.C.B.

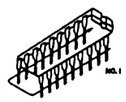
For [E], [EG], [EB], [EH], [EF], [EI] and [XL] areas.



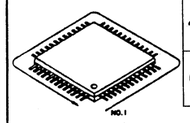
●Terminal guide of IC's, Transistors and Diodes.

LN2940T5M





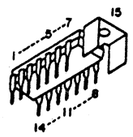
8 pin	BA4558FT1
	LM833M
	NJM4560M
24 pin	SVICXK5816M
64 pin	MN15283PEY-1



42 pin	MN6471
	MN6623B
64 pin	MN6625
	MN1554PEZ-1

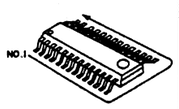
SVIH8DN2175

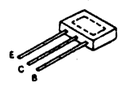
NJM4556SA



AN8377	16 pin

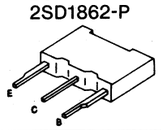
AN8373S
AN8374S



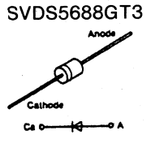


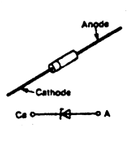
DTC124EST
2SA1309Q
2SC3311A-Q
2SD1450R
DTA124EST
2SA1547QSTV2

2SB1240-P
2SB1238QS
2SD1862-P

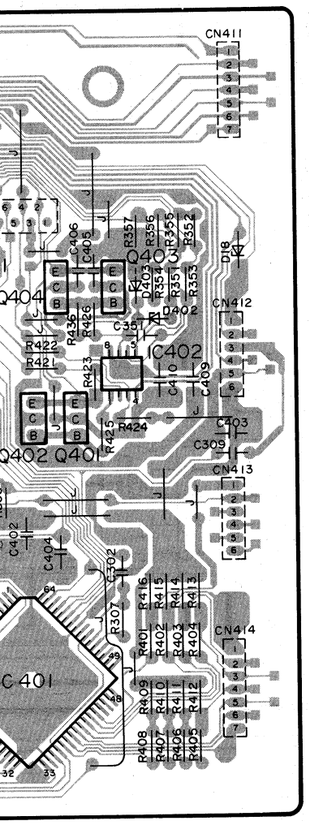


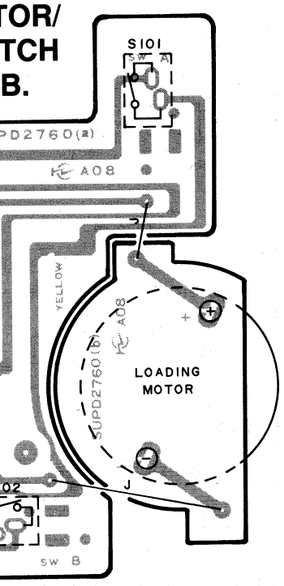
MA165
SVDS5688GT3



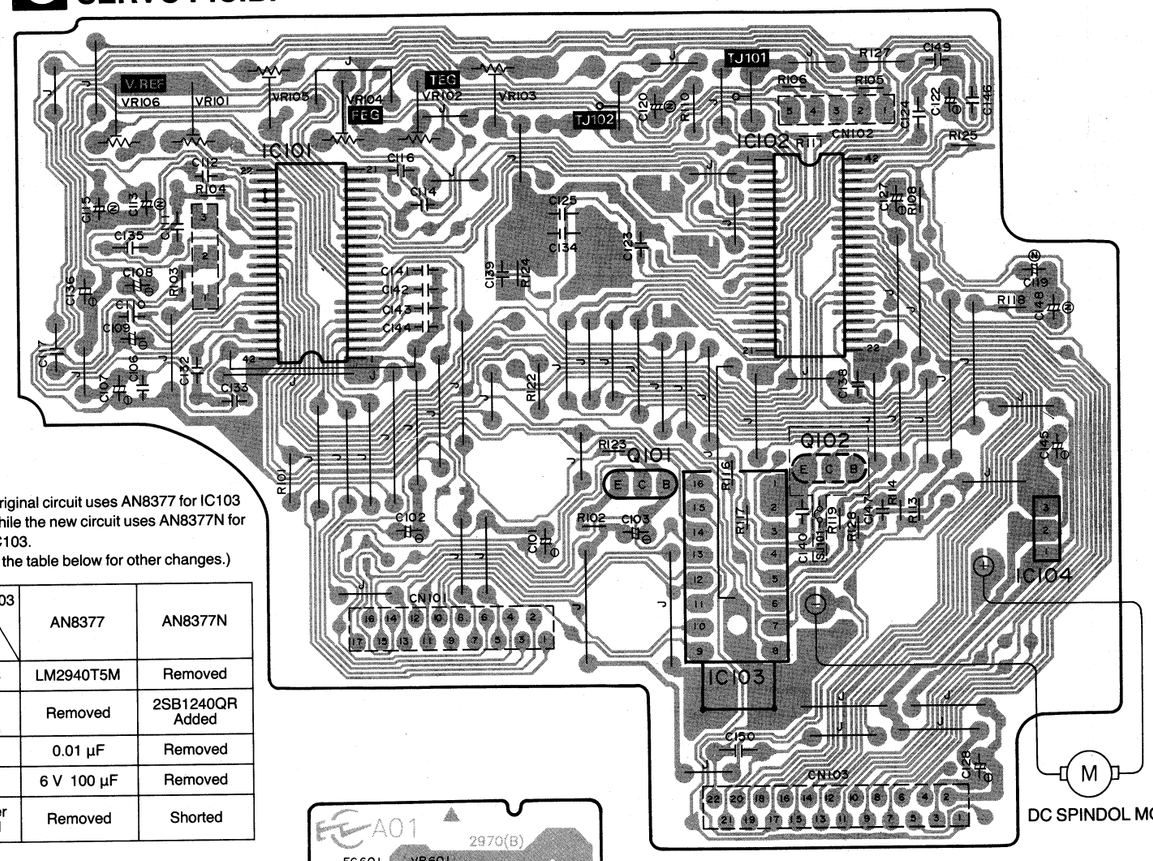


MA4330M
MA4062-H
MA4150-M
MA4033M





C SERVO P.C.B.

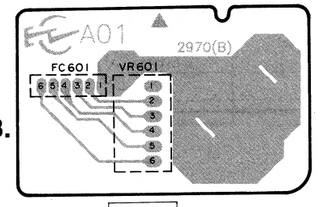


DC SPINDOL MOTOR

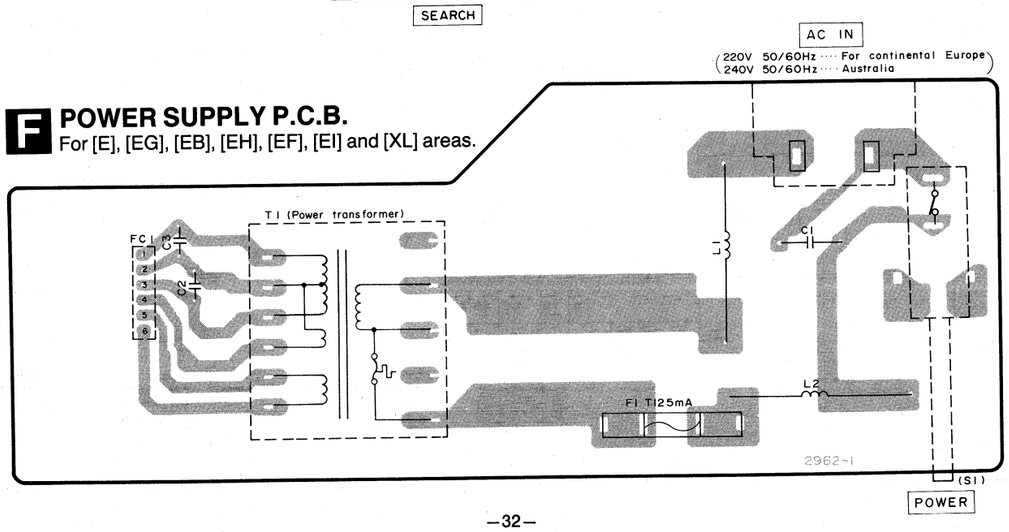
Note: Original circuit uses AN8377 for IC103 while the new circuit uses AN8377N for IC103.
(Refer to the table below for other changes.)

IC103 / Modifi-cations	AN8377	AN8377N
IC104	LM2940T5M	Removed
Q102	Removed	2SB1240QR Added
C140	0.01 µF	Removed
C145	6 V 100 µF	Removed
Jumper SJ101	Removed	Shorted

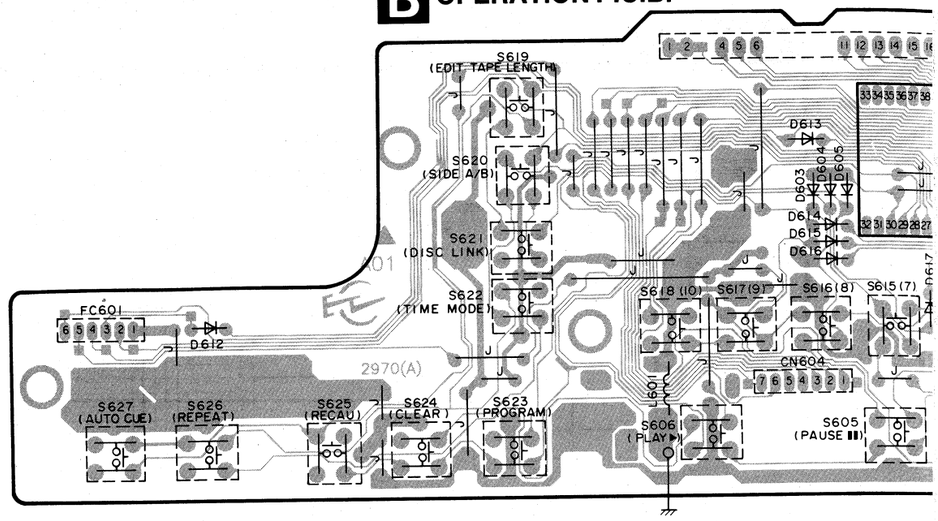
A SEARCH P.C.B.



F POWER SUPPLY P.C.B.
For [E], [EG], [EB], [EH], [EF], [EI] and [XL] areas.



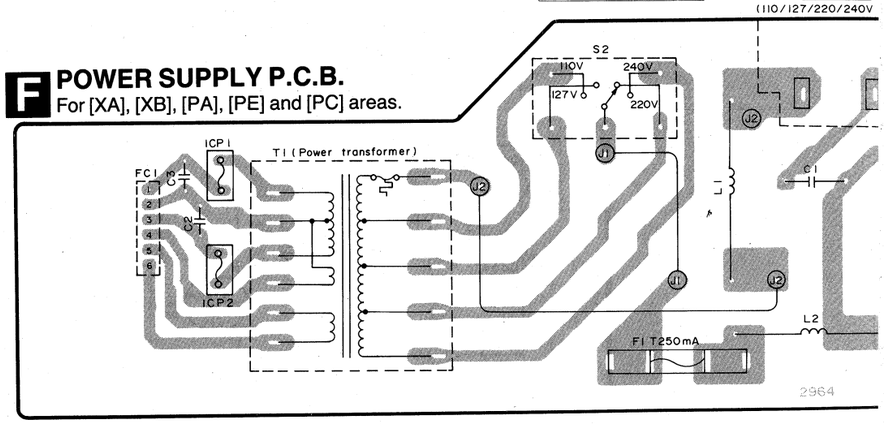
B OPERATION P.C.B.



VOLTAGE SELECTOR

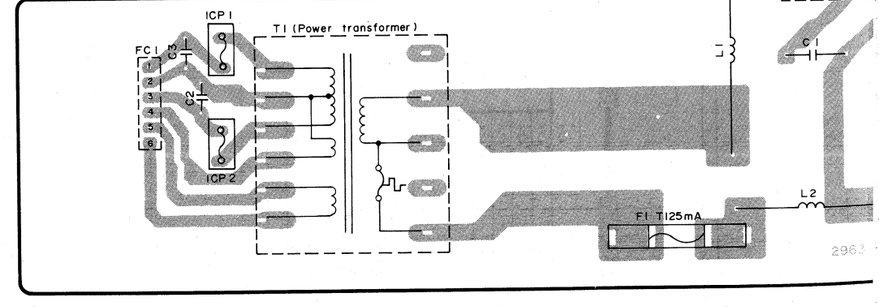
AC IN
(110/127/220/240V)

F POWER SUPPLY P.C.B.
For [XA], [XB], [PA], [PE] and [PC] areas.

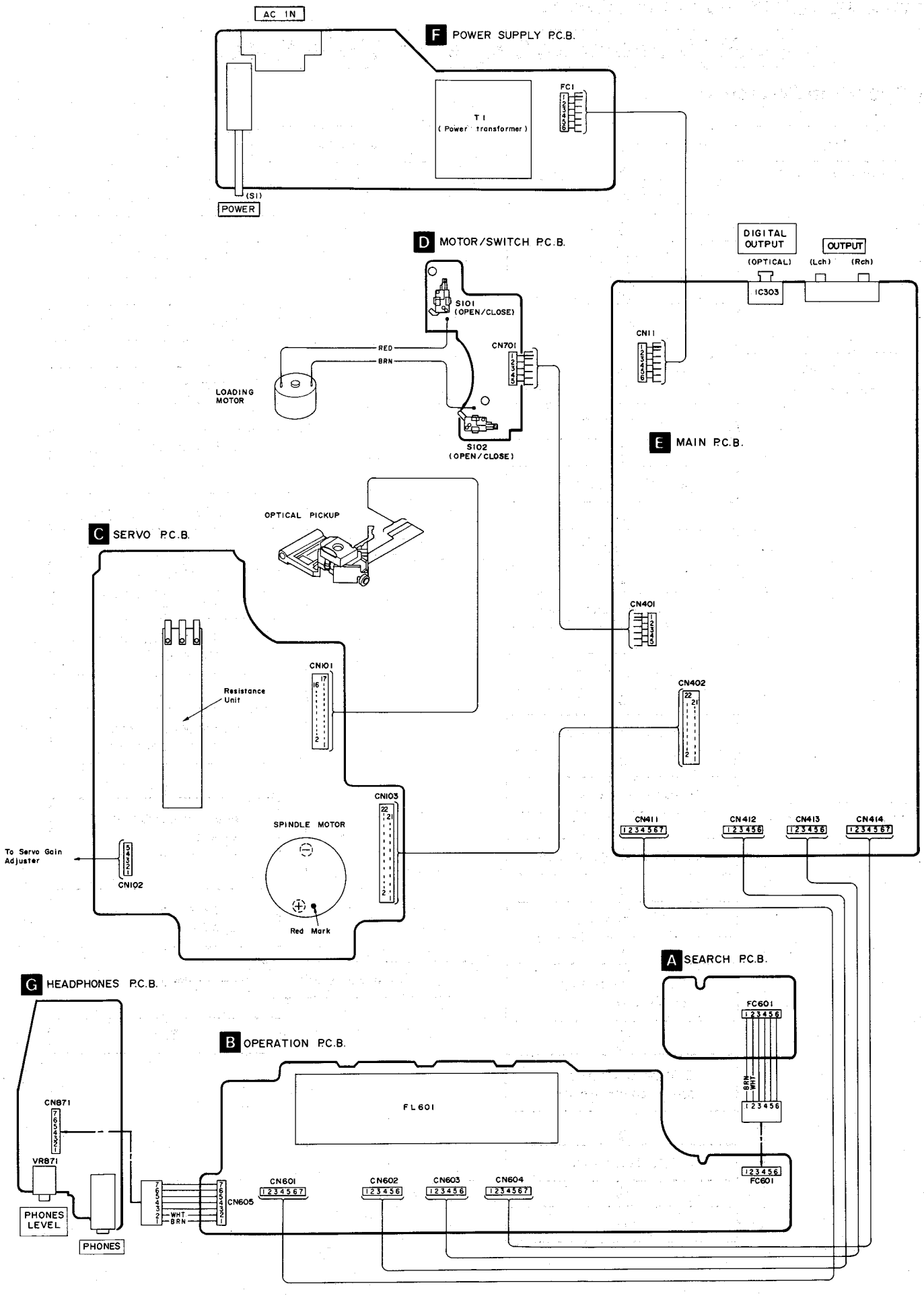


AC IN
(240V 50/60Hz)

F POWER SUPPLY P.C.B.
For [EK] area.



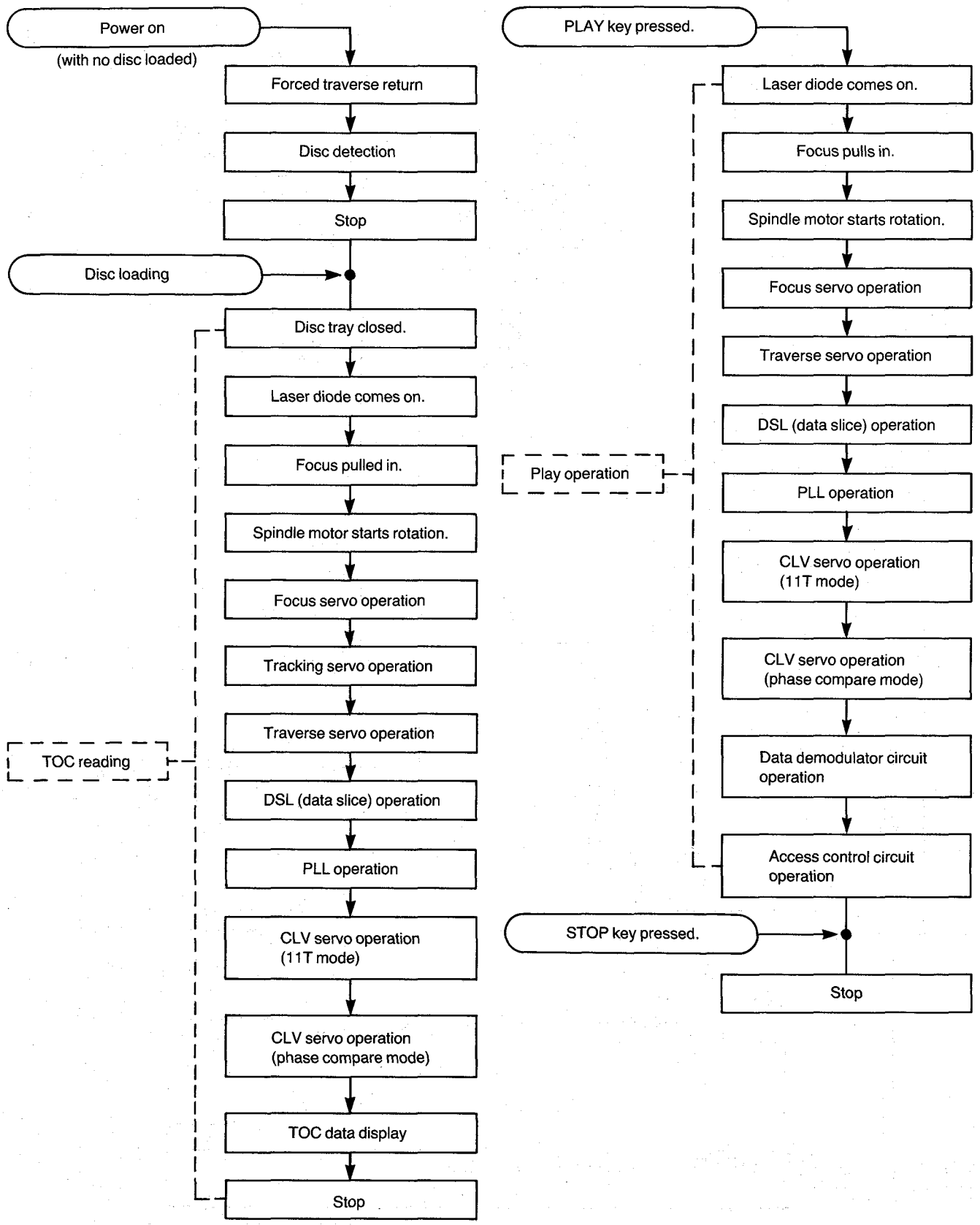
■ WIRING CONNECTION DIAGRAM



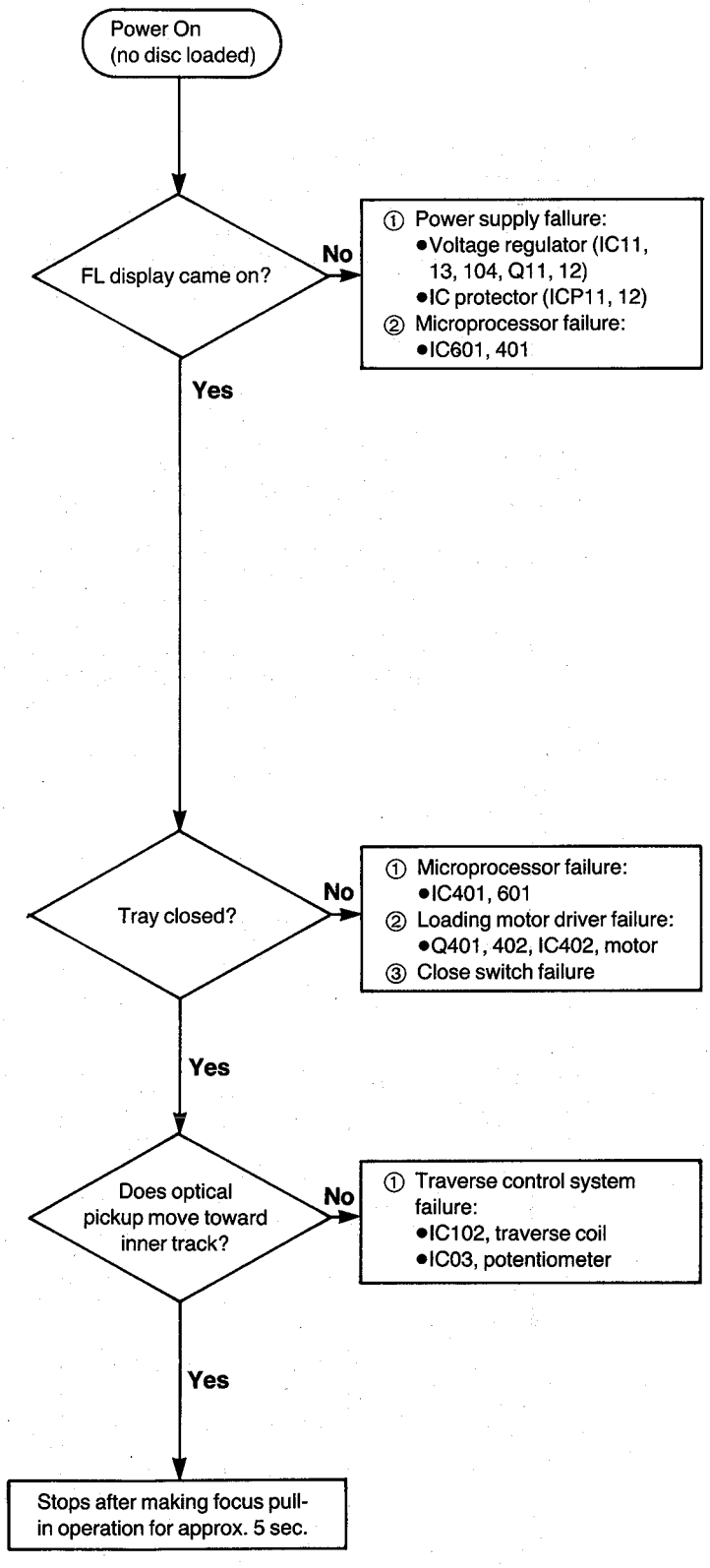
■ TROUBLESHOOTING GUIDE

SL-P333 Operation Sequence Check Sheet

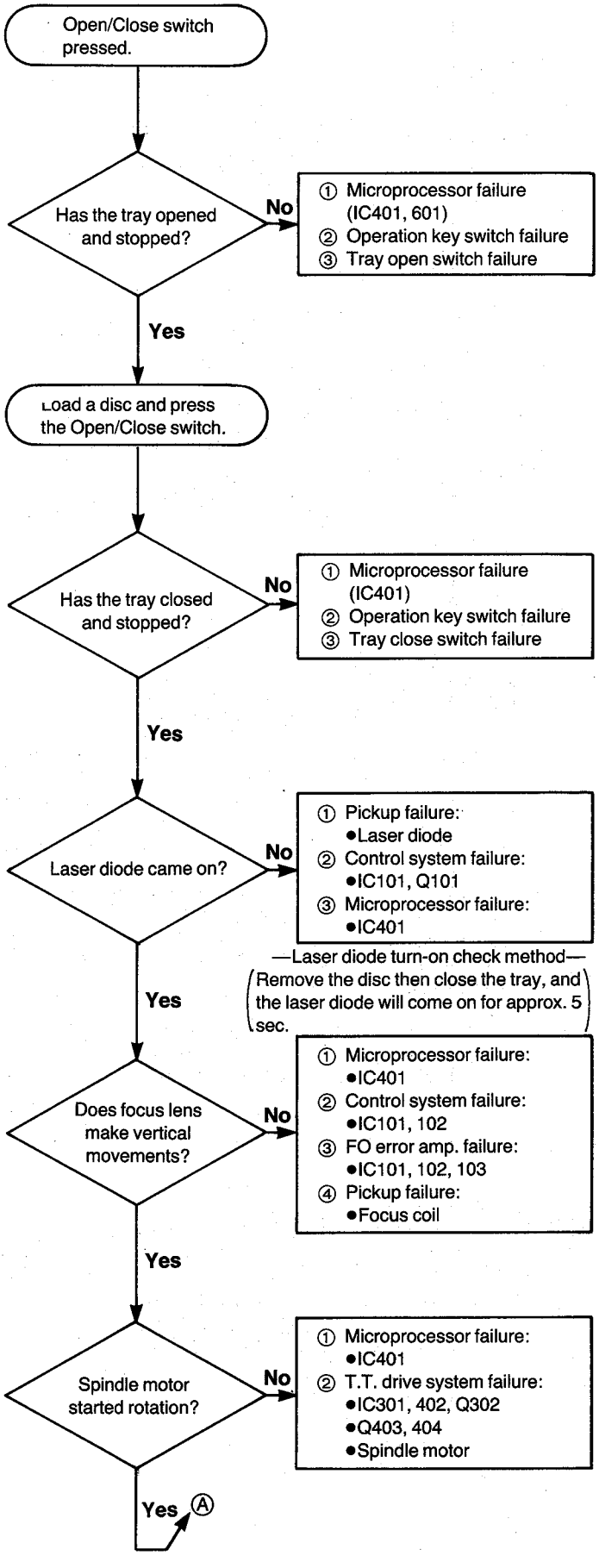
Play Operation Sequence

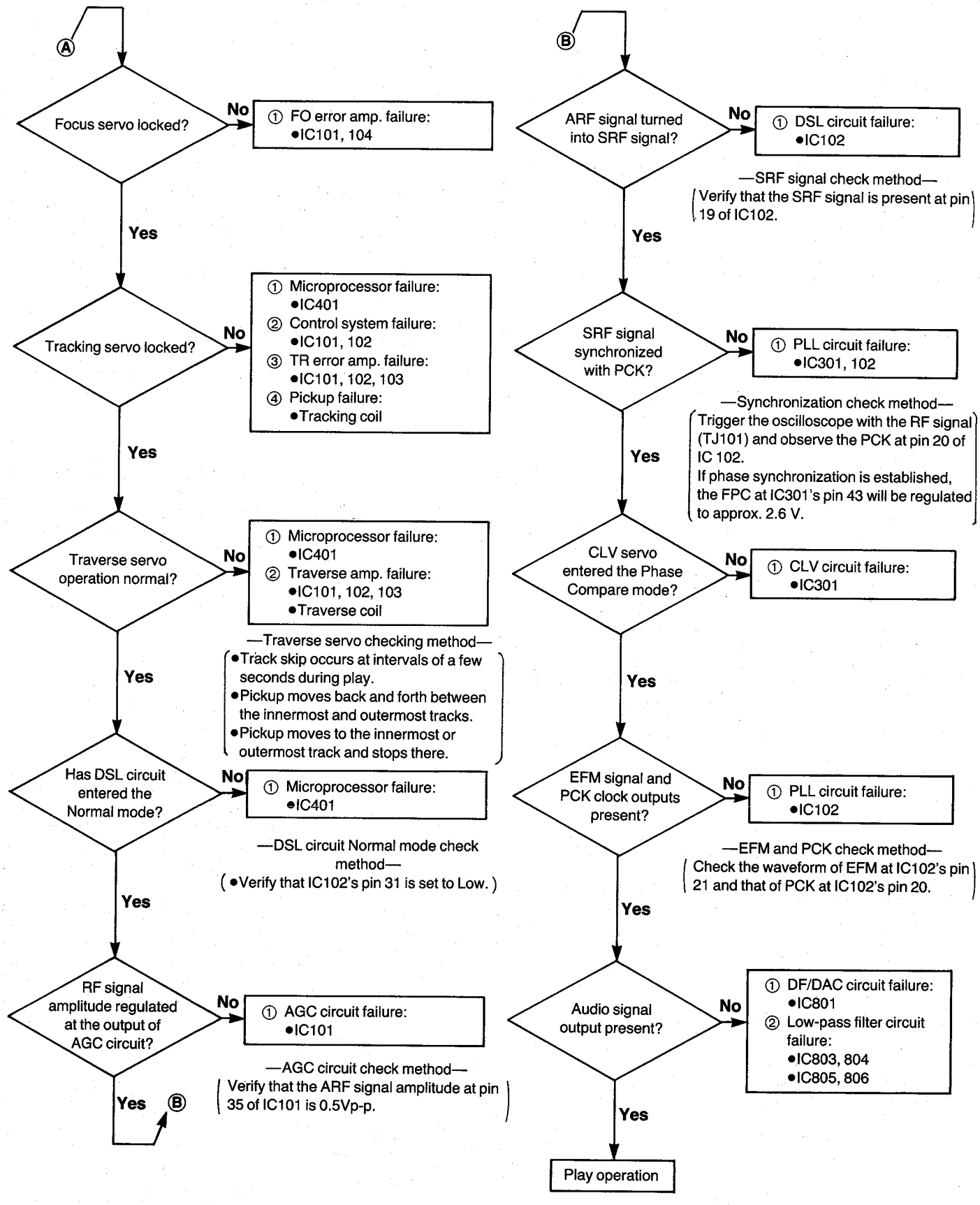


(Operation Sequence Just After Power On)



(TOC Read Operation-PLAY Operation)




Ⓐ
Focus servo locked?
No
① FO error amp. failure:
•IC101, 104
Yes
Tracking servo locked?
No
① Microprocessor failure:
•IC401
② Control system failure:
•IC101, 102
③ TR error amp. failure:
•IC101, 102, 103
④ Pickup failure:
•Tracking coil
Yes
Traverse servo operation normal?
No
① Microprocessor failure:
•IC401
② Traverse amp. failure:
•IC101, 102, 103
•Traverse coil
—Traverse servo checking method—
•Track skip occurs at intervals of a few seconds during play.
•Pickup moves back and forth between the innermost and outermost tracks.
•Pickup moves to the innermost or outermost track and stops there.
Yes
Has DSL circuit entered the Normal mode?
No
① Microprocessor failure:
•IC401
—DSL circuit Normal mode check method—
(•Verify that IC102's pin 31 is set to Low.)
Yes
RF signal amplitude regulated at the output of AGC circuit?
No
① AGC circuit failure:
•IC101
—AGC circuit check method—
Verify that the ARF signal amplitude at pin 35 of IC101 is 0.5Vp-p.
Yes Ⓑ
Ⓑ
ARF signal turned into SRF signal?
No
① DSL circuit failure:
•IC102
—SRF signal check method—
Verify that the SRF signal is present at pin 19 of IC102.
Yes
SRF signal synchronized with PCK?
No
① PLL circuit failure:
•IC301, 102
—Synchronization check method—
Trigger the oscilloscope with the RF signal (TJ101) and observe the PCK at pin 20 of IC 102.
If phase synchronization is established, the FPC at IC301's pin 43 will be regulated to approx. 2.6 V.
Yes
CLV servo entered the Phase Compare mode?
No
① CLV circuit failure:
•IC301
Yes
EFM signal and PCK clock outputs present?
No
① PLL circuit failure:
•IC102
—EFM and PCK check method—
Check the waveform of EFM at IC102's pin 21 and that of PCK at IC102's pin 20.
Yes
Audio signal output present?
No
① DF/DAC circuit failure:
•IC801
② Low-pass filter circuit failure:
•IC803, 804
•IC805, 806
Yes
Play operation

■ FUNCTIONS OF IC TERMINALS

•IC101 (AN8373S): Servo amp.

Pin No.	MarK	I/O Division	Function
1	AMP1	I	RF signal input (×30 amp.)
2	PDAD	I	Photo detector current input (A2)
3	PDA	I	Photo detector current input (A1)
4	PDBD	I	Photo detector current input (A4)
5	PDB	I	Photo detector current input (A3)
6	LPD	I	Non-inverting laser power input
7	LD	O	Laser power auto control output
8	FBL1	I	PD balance adjustment
9	FBL2	I	
10	TBL1	I	Tracking balance adjustment
11	TBL2	I	
12	FOOFS	I	Focus offset adjustment
13	IVA	O	Current/voltage conversion output (A)
14	IVB	O	Current/voltage conversion output (B)
15	FE	O	Focus gain adjustment output
16	FPI	I	Focus error signal input
17	TPI	I	Tracking error signal input
18	C. TPL	I	Tracking error filter capacitor input
19	C. TPH		
20	C. FPL	I	Focus error filter capacitor input
21	C. FPH		

Pin No.	MarK	I/O Division	Function
22	TPO	O	Tracking error signal output
23	FPO	O	Focus error signal output
24	FGC	I	Focus gain up signal input (Not used, connected to GND)
25	TGC	I	Tracking gain up signal input (Not used, connected to GND)
26	GD	I	Focus/tracking gain down signal input (Not used, connected to GND)
27	PTO	O	Position detecting amp. output
28	PTI	I	Position detecting amp. input
29	PBO	O	Position detecting buffer output
30	POT	I	Position detecting buffer input
31	BDO	O	Dropout detection output
32	$\overline{\text{RFDET}}$	O	RF detections signal output
33	SDO	O	Dropout detection pulse output
34	C. SBDO	I	Dropout detecting capacitor input
35	ARF	O	RF signal output
36	C AGC	I	AGC detecting capacitor input
37	VCC	I	Power supply (+5 V input)
38	LDON	I	Laser power control input
39	RF IN	I	RF signal input
40	AMPO	O	RF signal output
41	VREF	O	Reference voltage output
42	GND	I	Ground terminal

•IC102 (AN8374S): Servo processor

Pin No.	MarK	I/O Division	Function
1	LSA	I	Phase difference input (A)
2	LSB	I	Phase difference input (B)
3	TEOFS	I	Tracking offset adjustment
4	TE	O	Tracking gain adjustment
5	TEG	I	
6	TE OUT	O	Tracking error signal output
7	TE BPF	I	Tracking error gain detecting filter (Not used, open)
8	FEG	I	Focus gain adjustment
9	FE OUT	O	Focus error signal output
10	CLW	O	Triangular wave oscillator capacitor input
11	VREF	I	Reference voltage input
12	ARF	I	RF signal input
13	CDSL	I	Data slice filter capacitor input
14	FPC	I	Frequency difference signal input
15	GND	I	Ground terminal
16	C. PLL	I	PLL loop filter constant
17	VSS	I	Ground terminal
18	CLK	I	Frequency pull-in clock signal (88.2 kHz) input
19	SRF	O	Sliced and digitized RF signal output
20	PCK	O	Clock output extracted from SRF
21	EFM	O	EFM signal output synchronous with PCK
22	VDD	I	Power supply (+5 V input)
23	SPCNT	O	Track crossing speed control output (Not used, open)
24	SENSE	O	Selector output (track crossing state)
25	TRV	O	Traverse servo control output
26	$\overline{\text{FLOCK}}$	O	Focus lock signal output
27	KICK	O	Track kick signal output
28	LDON	O	Laser power control output
29	VDET	O	Focus/tracking gain up output (Not used, open)
30	CNT1	I	Control input (FOON: Focus servo ON signal)
31	CNT2	I	Control input (TRON: Tracking servo ON signal)
32	CNT3	I	Control input [KICKF: Kick direction (forward) command]
33	CNT4	I	Control input [KICKR: Kick direction (reverse) command]
34	TRVF	I	Traverse forward command signal
35	TRVR	I	Traverse backward command signal
36	$\overline{\text{RFDET}}$	I	RF detection signal input
37	BDO	I	Dropout detection input
38	VCC	I	Power supply (+5 V input)
39	TVPO	O	Traverse position detecting resistor/ capacitor inputs
40	TVPI	O	
41	BROUT	I	Tracking drive control output
42	BRIN	I	Tracking error signal input

•IC103 (AN8377): BTL drive

Pin No.	MarK	I/O Division	Function
1	PVCC	I	Driver power supply (+8.9 input)
2	VCC	I	Power supply (+8.9 V input)
3	TB	O	External transistor base driving output
4	VMON	O	Voltage output
5	TVDI	I	Traverse error signal input
6	FDI	I	Focus error signal input
7	TDI	I	Tracking error signal input
8	VREF	I	Reference voltage input
9	TD−	O	Inverting output of tracking driver
10	TD+	O	Non-inverting output of tracking driver
11	FD−	O	Inverting output of focus driver
12	FD+	O	Non-inverting output of focus driver
13	TVD−	O	Inverting output of traverse driver
14	TVD+	O	Non-inverting output of traverse driver
15	$\overline{\text{RESET}}$	O	Reset signal output
16	PC	I	PC input (connect to GND)

•IC301 (MN6625S): Digital signal processing

Pin No.	MarK	I/O Division	Function
1	BYTCK	O	Serial data byte clock (Not use, open)
2	LCLK	O	Crystal frame clock (Not use, open)
3	DEMPH	O	De-emphasis ON signal (de-emphasis ON at "H") (Not used, open)
4	SRDATA	O	Serial data output (MSB first)
5	SCK	O	Serial bit clock output
6	LRCK	O	LR discrimination signal output
7	WDCK	O	Serial data output word clock
8	LDG	O	L channel deglitch signal (Not used, open)
9	RDG	O	R channel deglitch signal (Not used, open)
10	IPFLAG	O	Interpolation flag (Interpolation at "H")
11	FLAG	O	Error flag terminal
12	XCK	O	Clock (16.9344 MHz) output (Not used, open)
13	TEST	I	Test mode selection (Not used, connected to +5 V)
14	TX	O	Digital signal output
15	SLEEP	I	Mode selector ("L": normal, "H": SLEEP mode)
16	CSEL	I	Test terminal ("L": normal)
17	X1	I	Clock input (16.9344 MHz)
18	X2	O	Clock output (16.9344 MHz) (Not used, open)
19	VSS	I	GND terminal
20	BLKCK	O	Sub-code block (Q data) clock (75 Hz)
21	$\overline{\text{CLDCK}}$	O	Sub-code frame (Q data) clock (7.35 kHz)
22	$\overline{\text{SUBQ}}$	O	Sub-code (Q data) output
23	$\overline{\text{RST}}$	I	Reset signal input (reset at "L")
24	MLD	I	Command load signal input

Pin No.	MarK	I/O Division	Function
25	MCLK	I	Command clock signal input
26	MDATA	I	Command data input
27	DMUTE	I	Muting control
28	$\overline{\text{TRON}}$	I	Tracking servo ON signal (tracking servo ON at "L")
29	STAT	O	Processing condition (CRC, CUE, CLVS, TT STOP, FCLV)
30	SUBC	O	Sub-code serial output data (Not used, open)
31	SBCK	I	Clock for sub-code serial output (Not used, open)
32	SMCK	O	Clock output (4.2336 MHz)
33	VDD	I	Power supply (connected to +5 V)
34	MEMP	I	Emphasis signal input
35	FG	I	Spindle motor FG signal input (Not used, open)
36	PC	O	Spindle motor ON signal (ON at "L")
37	EC	O	Spindle motor drive signal
38	RESY	O	Resynchronizing signal (Not used, open)
39	DO	I	Drop-out signal (Drop-out at "H")
40	SRF	I	EFM signal input (DSL)
41	EFM	I	EFM signal input (PLL)
42	PCK	I	PLL extract clock input (4.3218 MHz)
43	FPC	O	PLL frequency comparison signal
44 ~ 51	D7 ~ D0	I/O	16 K RAM data input/output
52	RAM/OE	O	16 K RAM OE signal
53	RAM/WE	O	16 K RAM WE signal
54 ~ 64	RAM/A0 ~ RAM/A10	O	16 K RAM address signal (RAMA0: LSB, RAMA10: MSB)

•IC401 (MN1554PEZ-1): System control

Pin No.	MarK	I/O Division	Function
1	BRECV	——	(Not used, open)
2	BSEND	——	(Not used, open)
3	SYNC	O	(Not used, open)
4	SIRQ	I	Not used (connected to +5 V)
5	BLKCK	I	Sub-code block (Q data) clock input (75 Hz)
6	CLDCK	I	Sub-code block (Q data) clock input (7.35 kHz)
7	SBO	I	(Not used, open)
8	SUBQ	I	Sub-code (Q data) input
9	RST	I	Reset signal input
10 ~ 13	P20 ~ P23	O	Not used (connected to +5 V)
14	CLOSE	O	Loading motor "Close" command
15	OPEN	O	Loading motor "Open" command
16	SLOW	O	(Not used, open)
17	MUTE	O	Muting control
18	SEEK	O	Traverse servo control (Not used, open)
19	NC	——	Not connected
20	TRV. R	O	Traverse "Reverse" command signal
21	TRV. F	O	Traverse "Forward" command signal
22	CNT4	O	Optical servo IC control signal [KICKR: Kick direction (reverse) command]
23	CNT3	O	Optical servo IC control signal [KICKF: Kick direction (forward) command]
24	CNT2	O	Optical servo IC control (TRON: Tracking servo)
25	VDD	I	Power supply (connected to +5 V)
26	DOWN	O	(Not used, open)
27	UP	O	(Not used, open)
28	CNT1	O	Optical servo IC control signal (FOON: Focus servo)

Pin No.	MarK	I/O Division	Function
29	CLOSE	I	Disc holder "Open" detection
30	OPEN	I	Disc holder "Close" detection
31	BCLK	I	(Not used, connected to GND)
32	BDATA	I	(Not used, connected to GND)
33	STAT	I	Processing status input from signal processing LSI
34	COMP	O	TOC reading control (ON at "L") (connected to GND)
35	FLOCK	I	Optical servo condition (focus) input
36	SENSE	I	Optical servo condition (track cross) input
37	RECV	I	Data receipt command signal
38	SEND	I	Data transmission command signal
39	ACK	I	Data discrimination signal
40	CLK	I	Data lock signal
41 ~ 44	DATA0 ~ DATA3	I	Key scan signal
45 ~ 52	NC	I	Not connected
53	OSC2	I	Clock terminal
54	OSC1	I	Clock input
55	X1	I	Optical servo condition input
56	X0	O	(Not used, open)
57	GND	I	GND terminal
58	DMUTE	O	Muting control
59	MDATA	O	Command data output
60	MCLK	O	Data clock output (command clock signal)
61	MLD	O	Data output (command load signal)
62	DOUTON	O	Optical output control signal (Not used, open)
63	EMPH	O	Emphasis signal output
64	NC	——	Not connected

•IC601 (MN15283PEY-1): FL drive and Timing signal generator

Pin No.	Mark	Terminal Name	I/O Division	Function
1	VSS	GND	I	GND terminal
2	XO	——	O	(Not used, open)
3	XI	TRCNT	I	(Not used, open)
4	PO0	MRLY	O	Muting control terminal
5	PO1	MDATA	O	Command data output
6	PO2	MCLK	O	Data clock output (Command clock)
7	PO3	MLD	O	Data output (Command load)
8	P10	SLOW	O	Motor drive control
9	P11	FOW/REV	O	Motor drive control
10	P12	LOADING	O	Motor drive control
11	P13	HIGH	O	Motor drive control
12	$\overline{\text{SYNC}}$	——	O	(Not used, open)
13	$\overline{\text{RST}}$	$\overline{\text{RESET}}$	I	Reset signal input (Reset at "L")
14	$\overline{\text{IRQ}}$	$\overline{\text{BLKCK}}$	I	Sub-code (Q data) clock (75 kHz) input
15 ~ 18	P50 ~ P53	KEY	I	Key scan signal input
19	$\overline{\text{SBT}}$	$\overline{\text{CLDCK}}$	I	(Not used, open)
20	$\overline{\text{SBD}}$	$\overline{\text{SUBQ}}$	I	
21	P20	——	O	(Not used, open)
22	P21	——	O	
23	P22	$\overline{\text{REV}}$	O	Traverse "Reverse" Command signal
24	P23	$\overline{\text{FWD}}$	O	Traverse "Foward" Command signal
25	P30	CNT4	O	Optical servo IC control signal [KICKR: Kick direction (reverse) control]
26	P31	CNT3	O	Optical servo IC control signal [KICKF: Kick direction (forward) control]
27	P32	CNT2	O	Optical servo IC control signal (TRON: Tracking servo)
28	P33	CNT1	O	(Not used, open)
29	P40	STAT	I	Processing status input from signal processing LSI
30	P41	HIGHT	I	Elevator hight signal input
31	P42	$\overline{\text{FLOCK}}$	I	(Not used, open)
32	P43	SENSE	I	
33	P60	PAUSE	O	(Not used, open)
34	P61	PLAY	O	
35	DAC	DAC	O	
36	VPP	——	I	FL drive power supply
37 ~ 52	D0 ~ DF	——	O	FL grid signal and key scan signal
53 ~ 61	S8 ~ S0	——	O	FL anode signal
62	VDD	——	I	Power supply (connected to +5 V)
63	OSC2	——	I	Clock terminal
64	OSC1	——	I	Clock signal input

•IC801 (MN6471): Digital Filter and D/A Converter...For [EG], [PA], [PE] and [PC] areas.

Pin No.	Mark	I/O Division	Function
1	MLD	I	Command load input (load: L)
2	RSTB	I	Reset signal input (reset at "L")
3	IE	I	Not used, connected to GND
4	TP1	—	TEST terminal
5	TP2	—	
6	TEST1	I	TEST terminal 1 (connected to GND)
7	TEST2	I	TEST terminal 2 (connected to GND)
8	NC	—	Not connected
9	NC	—	Not connected
10	AVDD4	I	Power supply (connected to +5 V)
11	OUTL (−)	O	Lch data output, (−) terminal
12	AVSS4	I	GND terminal
13	AVSS3	I	GND terminal
14	OUTL (+)	O	Lch data output, (+) terminal
15	AVDD3	I	Power supply (connected to +5 V)
16	NC	—	Not connected
17	AVDD2	I	Power supply (connected to +5 V)
18	OUTR (+)	O	Rch data output, (+) terminal
19	AVSS2	I	GND terminal (analog system)
20	AVSS1	I	GND terminal (analog system)
21	OUTR (−)	O	Rch data output, (−) terminal

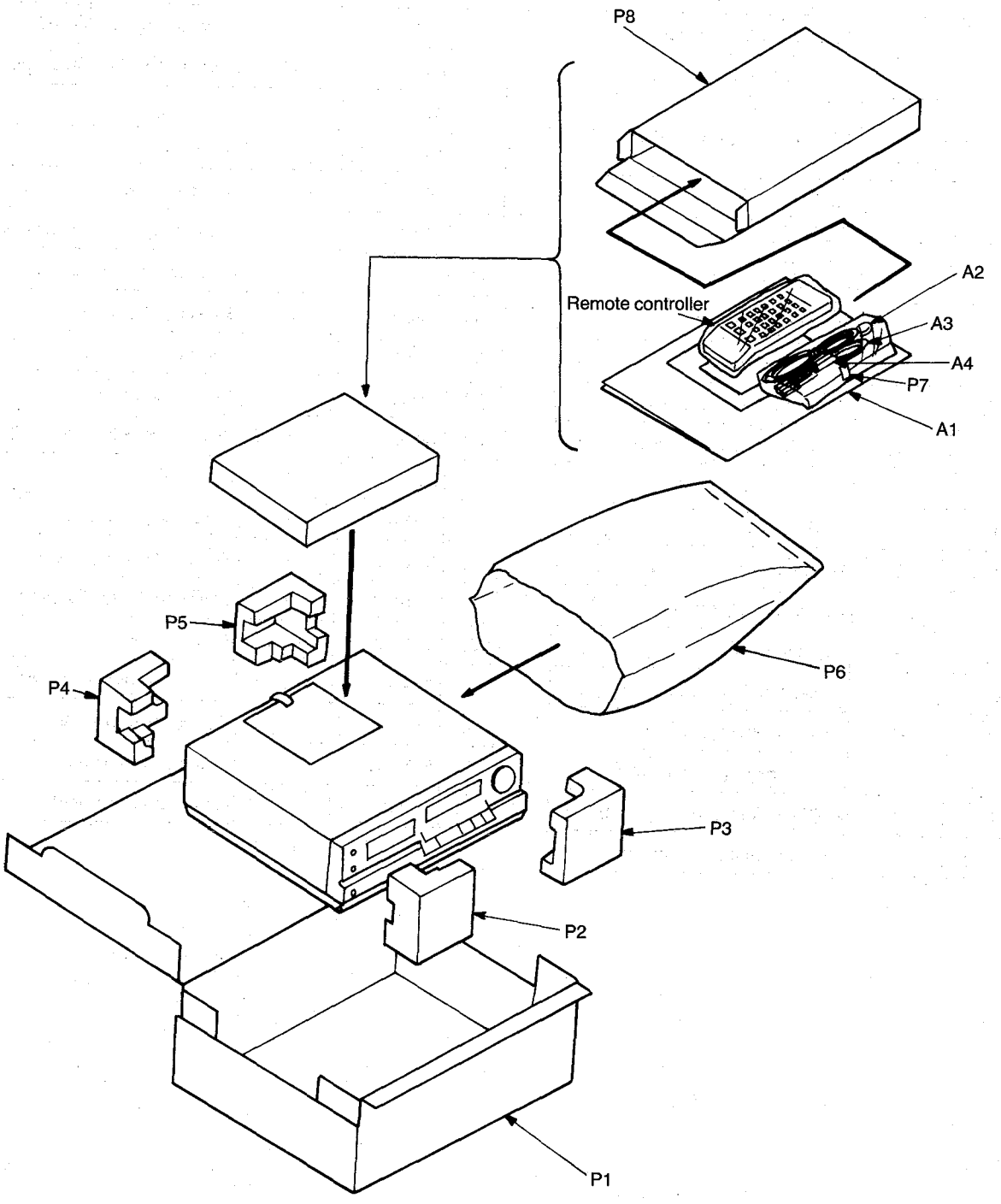
Pin No.	Mark	I/O Division	Function
22	AVDD1	I	Power supply (connected to +5 V)
23	DVDD1	I	Power supply (connected to +5 V)
24	DVSS1	I	GND terminal (digital system)
25	X2	O	Clock output
26	X1	I	Clock input
27	NC	—	Not connected
28	DVDD2	I	Power supply (connected to +5 V)
29	DVSS2	I	GND terminal (digital system)
30	NSUB	I	Sub-strate terminal (Not used, connected to +5 V)
31	ZFLGB	O	Zero input detector terminal (Not used, open)
32	192 fs	O	192 fs (8.4672 MHz) (Not used, open)
33	LRPOL	I	LR clock selector (Not used connected to +5 V)
34	LRCLK	I	LR discrimination signal input
35	BCLK	I	Serial bit clock input
36	SRDATA	I	Serial data input (MSB first)
37	DVSS3	I	GND terminal (digital system)
38	DVDD	I	Power supply (connected to +5 V)
39	384 fs	O	384 fs (16.9344 MHz) output
40	PD	I	Power down terminal
41	MDATA	I	Command data input
42	MCLK	I	Command clock input

•IC801 (MN6623B): Digital Filter and D/A Converter...For others.

Pin No.	Mark	I/O Division	Function
1	MLD	I	Command load input (load: L)
2	RSTB	I	Reset signal input (reset at "L")
3	IE	I	I²S select terminal ("H"=I²S)
4	TP1	——	TEST terminal (Not connected)
5	TP2	——	
6	TEST1	I	TEST terminal 1 (connected to GND)
7	TEST2	I	TEST terminal 2 (connected to GND)
8	NC	——	Not connected
9	NC	——	Not connected
10	AVDD4	I	Power supply (connected to +5 V)
11	OUTL (−)	O	Lch data output, (−) terminal
12	AVSS4	I	GND terminal
13	AVSS3	I	GND terminal
14	OUTL (+)	O	Lch data output, (+) terminal
15	AVDD3	I	Power supply (connected to +5 V)
16	NC	——	Not connected
17	AVDD2	I	Power supply (connected to +5 V)
18	OUTR (+)	O	Rch data output, (+) terminal
19	AVSS2	I	GND terminal (analog system)
20	AVSS1	I	GND terminal (analog system)
21	OUTR (−)	O	Rch data output, (−) terminal

Pin No.	Mark	I/O Division	Function
22	AVDD1	I	Power supply (connected to +5 V)
23	DVDD1	I	Power supply (connected to +5 V)
24	DVSS1	I	GND terminal (digital system)
25	X2	O	Clock output
26	X1	I	Clock input
27	NC	——	Not connected
28	DVDD2	I	Power supply (connected to +5 V)
29	DVSS2	I	GND terminal (digital system)
30	NSUB	I	Sub-strate terminal
31	O OUT	——	Not used
32	192 fs	O	192 fs (Not used)
33	LRPOL	I	LR clock selector (Not used)
34	L/R	I	L/R clock
35	SRCK	I	Serial data best clock
36	SRDATA	I	Serial data input (MSB first)
37	DVSS3	I	GND terminal (digital system)
38	DVDD3	——	Power supply
39	384 fs	O	384 fs (16.9344 MHz) output
40	PD	I	Power down terminal
41	MDATA	I	Command data input
42	MCLK	I	Command clock input

■ PACKING



■ RESISTORS AND CAPACITORS

Notes : * Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

Numbering System For Resistors

Example:

ERD	25	F	J	102
Type	Wattage (1/4W)	Shape	Tolerance	Value (1KΩ)
ERX	2	AN	J	471
Type	Wattage (2W)	Shape	Tolerance	Value (470Ω)

Numbering System For Capacitors

Example:

ECKD	1H	102	Z	F
Type	Voltage (50V)	Value (0.001μF)	Tolerance	Unique
ECEA	50	M	330	
Type	Voltage (50V)	Characteristics	Value (33μF)	

- Capacity values are in microfarads (μF) unless specified otherwise, P = Pico-farads (pF) F = Farads (F).
- Resistance values are in ohms (Ω), unless specified otherwise, 1K = 1,000Ω, 1M = 1,000kΩ

Resistor Type	Wattage		Tolerance
ERD : Carbon	10 : 1/8W	12 : 1/2W	J : ±5%
ERG : Metal Oxide	14 : 1/4W	25 : 1/4W	F : ±1%
ERQ : Fuse Type Metal	1A : 1W	18 : 1/8W	G : ±2%
ERX : Metal Film	S2 : 1/4W	S1 : 1/2W	J : ±5%
ERD L : Carbon (chip)	2F : 1/4W	50 : 1/2W	K : ±10%
ERO K : Metal Film (chip)	2A : 2W	3A : 3W	M : ±20%
ERC : Solid	6G : 1/10W	8G : 1/8W	
ERF : Incombustible Box-Shaped			
ERM : Wire-Wound			
RRJ : Chip Resistor			
ERJ : Chip Resistor			

Capacitor Type	Voltage		Tolerance
ECE : Electrolytic	0J : 6.3V	1A : 10V	K : ±10%
ECCD : Ceramic	1C : 16V	1E : 25V	M : ±20%
ECKD : Ceramic Capacitor	1H : 50V	1V : 35V	Z : +80 −20 %
ECQM : Polyester	50 : 50V	05 : 50V	J : ±5%
ECQP : Polypropylene	2H : 500V	2A : 100V	G : ±2%
ECG : Ceramic	1 : 100V	1J : 63V	F : ±1%
ECEA N : Non Polar Electrolytic	KC : 400V AC		C : ±0.25pF
QCU : Ceramic (Chip Type)	KC : 125V AC (UL)		D : ±0.5pF
ECUX : Ceramic (Chip Type)			
ECF : Semiconductor			
EECW : Liquid electrolyte double layer capacitor			

Ref. No.	Part No.	Value.
RESISTORS(VALUE,WATTAGE)		
R11	ERDS2TJ101	100 1/4
R13	ERDS2TJ103	10K 1/4
R14	ERDS2TJ103	10K 1/4
R15	ERDS2TJ331	330 1/4
R16	ERDS2TJ102	1K 1/4
R17	ERDS2TJ471	470 1/4
R301	ERDS2TJ472	4.7K 1/4
R302	ERDS2TJ472	4.7K 1/4
R303	ERDS2TJ472	4.7K 1/4
R304	ERDS2TJ472	4.7K 1/4
R305	ERDS2TJ472	4.7K 1/4
R306	ERDS2TJ472	4.7K 1/4
R307	ERDS2TJ104	100K 1/4
R308	ERDS2TJ561	560 1/4
R309	ERDS2TJ472	4.7K 1/4
R311	ERDS2TJ472	4.7K 1/4
R312	ERDS2TJ100	10 1/4
R313	ERDS2TJ100	10 1/4
R314	ERDS2TJ182	1.8K 1/4
R320	ERDS2TJ331	330 1/4
R321	ERDS2TJ822	8.2K 1/4
R351	ERDS2TJ103	10K 1/4
R352	ERDS2TJ154	150K 1/4
R353	ERDS2TJ123	12K 1/4
R354	ERDS2TJ154	150K 1/4
R355	ERDS2TJ333	33K 1/4
R356	ERDS2TJ333	33K 1/4
R357	ERD25FVJ8R2T	8.2 1/4
R401	ERDS2TJ221	220 1/4
R402	ERDS2TJ221	220 1/4
R403	ERDS2TJ221	220 1/4
R404	ERDS2TJ221	220 1/4
R405	ERDS2TJ221	220 1/4
R406	ERDS2TJ221	220 1/4
R407	ERDS2TJ221	220 1/4
R408	ERDS2TJ221	220 1/4
R409	ERDS2TJ472	4.7K 1/4
R410	ERDS2TJ472	4.7K 1/4
R411	ERDS2TJ472	4.7K 1/4
R412	ERDS2TJ472	4.7K 1/4
R413	ERDS2TJ472	4.7K 1/4
R414	ERDS2TJ472	4.7K 1/4
R415	ERDS2TJ472	4.7K 1/4
R416	ERDS2TJ472	4.7K 1/4
R417	ERDS2TJ472	4.7K 1/4
R418	ERDS2TJ472	4.7K 1/4
R419	ERDS2TJ472	4.7K 1/4
R420	ERDS2TJ472	4.7K 1/4
R421	ERDS2TJ913T	91K 1/4
R422	ERDS2TJ913T	91K 1/4
R423	ERDS2TJ124	120K 1/4
R424	ERDS2TJ124	120K 1/4
R425	ERDS2TJ101	100 1/4
R426	ERDS2TJ101	100 1/4
R427	ERDS2TJ472	4.7K 1/4
R431	ERDS2TJ472	4.7K 1/4
R432	ERDS2TJ101	100 1/4
R433	ERDS2TJ153	15K 1/4
R434	ERDS2TJ393	39K 1/4
R435	ERDS2TJ102	1K 1/4
R436	ERDS2TJ150	15 1/4
R601	ERDS2TJ472	4.7K 1/4
R602	ERDS2TJ472	4.7K 1/4
R603	ERDS2TJ472	4.7K 1/4
R604	ERDS2TJ472	4.7K 1/4
R605	ERDS2TJ472	4.7K 1/4
R606	ERDS2TJ472	4.7K 1/4
R607	ERDS2TJ105	1M 1/4
R801	ERDS2TJ103	10K 1/4
R802	ERDS2TJ103	10K 1/4
R803	ERDS2TJ103	10K 1/4
R804	ERDS2TJ103	10K 1/4
R805	ERDS2TJ273	27K 1/4
R806	ERDS2TJ273	27K 1/4
R807	ERDS2TJ273	27K 1/4
R808	ERDS2TJ273	27K 1/4
R809	ERDS2TJ473	47K 1/4
R810	ERDS2TJ473	47K 1/4
R811	ERDS2TJ473	47K 1/4
R812	ERDS2TJ473	47K 1/4
R813	ERDS2TJ221	220 1/4
R814	ERDS2TJ221	220 1/4
R815	ERDS2TJ474	470K 1/4
R816	ERDS2TJ474	470K 1/4
R817	ERDS2TJ103	10K 1/4
R818	ERDS2TJ103	10K 1/4
R819	ERDS2TJ471	470 1/4
R820	ERDS2TJ471	470 1/4
R821	ERDS2TJ473	47K 1/4
R822	ERDS2TJ473	47K 1/4
R823	ERDS2TJ331	330 1/4
R824	ERDS2TJ221	220 1/4
R825	ERDS2TJ221	220 1/4
R826	ERDS2TJ102	1K 1/4
R827	ERDS2TJ102	1K 1/4
R831	ERDS2TJ472	4.7K 1/4
R840	ERDS2TJ331	330 1/4
R841	ERDS2TJ105	1M 1/4
R842	ERDS2TJ105	1M 1/4
R851	ERDS2TJ102	1K 1/4
R852	ERDS2TJ471	470 1/4
R853	ERDS2TJ333	33K 1/4
R854	ERDS2TJ183	18K 1/4
R855	ERDS2TJ102	1K 1/4
R856	ERDS2TJ102	1K 1/4
R857	ERDS2TJ102	1K 1/4
R858	ERDS2TJ102	1K 1/4
R859	ERDS2TJ102	1K 1/4
R861	ERDS2TJ102	1K 1/4
R862	ERDS2TJ102	1K 1/4
CAPACITORS(VALUE,VOLTAGE)		
C1 ⚠	ECKDKC103PF2	0.01 125
C2 ⚠	ECKM1H103ZFX	0.01 50
C3 ⚠	ECKM1H103ZFX	0.01 50
C10	ECEA1CU332	3300 16
C11	ECEA1CU222	2200 16
C12	ECEA1VU101	100 35
C13	ECEA1AK101	100 10
C14	ECEA1AK101	100 10
C15	ECEA0JK470	47 6.3
C16	ECEA1CU331	330 16
C17	ECEA1CU331	330 16
C18	ECEA1VU101	100 35

Ref. No.	Part No.	Value.
C21	ECEA1CU221	220 16
C30	ECFR1E104ZF5	0.1 25
C301	ECFR1E104ZF5	0.1 25
C302	ECBT1C103NS5	0.01 16
C303	ECBT1H6R8K5	6.8P 50
C304	ECBT1H220J5	22P 50
C306	ECEA0JK101	100 6.3
C307	ECFR1E104ZF5	0.1 25
C308	ECFR1E104ZF5	0.1 25
C309	ECBT1C103NS5	0.01 16
C310	ECFR1E104ZF5	0.1 25
C311	ECFR1E104ZF5	0.1 25
C351	ECBT1H102KB5	0.001 50
C401	ECFR1E104ZF5	0.1 25
C402	ECEA0JK470	47 6.3
C403	ECFR1E104ZF5	0.1 25
C404	ECFR1E104ZF5	0.1 25
C405	ECBT1H102KB5	0.001 50
C406	ECBT1H102KB5	0.001 50
C407	ECEA1HKN010B	1 50
C409	ECBT1H102KB5	0.001 50
C410	ECBT1H102KB5	0.001 50
C411	ECFR1E104ZF5	0.1 25
C601	ECEA0JK470	47 6.3
C602	ECBT1E223ZF	0.022 25
C603	ECBT1E223ZF	0.022 25
C801	ECBT1H680J5	68P 50
C802	ECBT1H680J5	68P 50
C803	ECBT1H680J5	68P 50
C804	ECBT1H680J5	68P 50
C805	ECBT1H470J5	47P 50
C806	ECBT1H470J5	47P 50
C807	ECBT1H470J5	47P 50
C808	ECBT1H470J5	47P 50
C809	ECEA1EN3R3S	3.3 25
C810	ECEA1EN3R3S	3.3 25
C811	ECBT1H102KB5	0.001 50
C812	ECBT1H102KB5	0.001 50
C813	ECEA1CN220S	22 16
C814	ECEA1CN220S	22 16
C815	ECBT1H102KB5	0.001 50
C816	ECBT1H102KB5	0.001 50
C822	ECBT1H5R6K5	5.6P 50
C824	ECBT1H5R6K5	5.6P 50
C841	ECEA0JS331	330 6.3
C851	ECEA0JU471	470 6.3
C852	ECEA0JS331	330 6.3
C853	ECEA1CKN100B	10 16
C854	ECFR1E104ZF5	0.1 25
C856	ECFR1E104ZF5	0.1 25
C857	ECFR1E104ZF5	0.1 25
C858	ECFR1E104ZF5	0.1 25
C859	ECFR1E104ZF5	0.1 25
C861	ECEA1CU101	100 16
C862	ECEA1CU101	100 16
C881	ECEA1CN101SE	100 16
C882	ECEA1CN101SE	100 16
SERVO P.C.B.		
RESISTORS(VALUE,WATTAGE)		
R101	ERDS2TJ471	470 1/4
R102	ERJ6GEYJ120V	12 1/10
R103	ERJ6GEYJ122	1.2K 1/10
R104	ERJ6GEYJ471	470 1/10
R105	RRJ6GCJ102TE	1K 1/6
R106	RRJ6GCJ102TE	1K 1/6
R108	ERJ6GEYJ224V	220K 1/10
R110	ERDS2TJ222	2.2K 1/4
R111	ERJ6GEYJ154V	150K 1/10
R113	ERJ6GEYJ472V	4.7K 1/10
R114	ERJ6GEYJ683V	68K 1/10
R116	ERJ6GEYJ332V	3.3K 1/10
R117	ERJ6GEYJ123	12K 1/10
R118	ERJ6GEYJ333V	33K 1/10
R119	RRJ6GCJ223TE	22K 1/6
R122	ERDS2TJ104	100K 1/4
R123	ERJ6GEYJ470V	47 1/10
R124	RRJ6GCJ103TE	10K 1/6
R125	RRJ6GCJ222TE	2.2K 1/6
R127	ERDS2TJ681	680 1/4
R128	RRJ6GCJ103TE	10K 1/6

Ref. No.	Part No.	Value.
CAPACITORS(VALUE,VOLTAGE)		
C101	ECEA1CKS220I	22 16
C102	ECEA1HKS010I	1 50
C103	ECEA1CKS220I	22 16
C106	RCUV1E104ZF	0.1 25
C107	ECEA0GKS101I	100
C108	ECEA0JKS470I	47 6.3
C109	ECEA1HKS010I	1 50
C110	RCUV1H681KB	680P 50
C111	ECUV1C224KR	0.22 16
C112	RCUV1H331KB	330P 50
C113	ECEA1HSN010I	1 50
C114	RCUV1E333KB	0.033 25
C115	ECEA1HSN010I	1 50
C116	RCUV1E333KB	0.033 25
C117	ECBT1H102KB5	0.001 50
C119	ECEA1CKN4R7I	4.7 16
C120	ECEA1CKN4R7I	4.7 16
C122	ECEA0JKS220I	22 6.3
C123	RCUV1E104ZF	0.1 25
C124	ECUV1E823KB	0.082 25
C125	ECUV1C224KR	0.22 16
C127	ECEA0JKF101I	100 6.3
C128	ECEA1CKA101I	100 16
C132	ECUV1E104KB	0.1 25
C133	RCUV1H330KC	33P 50
C134	ECUV1C224KR	0.22 16
C135	ECUV1C224KR	0.22 16
C136	ECEA0GKS101I	100
C138	RCUV1E104ZF	0.1 25
C139	RCUV1H470KC	47P 50
C140	RCUV1E103KB	0.01 25
C141	RCUV1H470KC	47P 50
C142	RCUV1H470KC	47P 50
C143	RCUV1H470KC	47P 50
C144	RCUV1H470KC	47P 50
C145	ECEA0JKF101I	100 6.3
C146	RCUV1H181KC	180P 50
C147	RCUV1H472KB	0.0047 50
C148	ECEA1ESN4R7I	4.7 25
C149	RCUV1E104ZF	0.1 25
C150	RCUV1E103KB	0.01 25

■ REPLACEMENT PARTS LIST

Notes : ＊Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
＊**Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)**
Parts without these indications can be used for all areas.
＊"Ⓢ" mark parts are used for silver type only.
＊"Ⓚ" mark parts are used for black type only.
Parts other than "Ⓢ" and "Ⓚ" marked are used for both silver and black types.
＊**Remote Control Ass'y:**
Supply period for three years from termination of production.
＊**Warning:** This product uses a laser diode. Refer to caution statements on page 3.
＊**ACHTUNG:**
●Die lasereinheit nicht zerlegen.
●Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC11	LM2940T5	I.C, REGULATOR
IC13	BA4558FT1	I.C, RESET
IC301	MN6625	IC, SIGNAL PROCESSING
IC302	SVICXK5816M	I.C, 16K RAM
IC303	T0TX174	I.C, OPTICAL TRANSMITTER
IC401	MN1554PEZ-1	I.C, SYSTEM CONTROL
IC402	BA4558FT1	I.C, MOTOR DRIVE
IC601	MN15283PEY-1	I.C, FL DRIVE
IC602	HC-MD10E	I.C, REMOTE SENSOR
IC801 (EG, PA, PE) (PC)	MN6471	I.C, DF & D/A CONVERTER
IC801 (E, EB, EH, EF) (EI, EK, XL) (XB, XA)	MN6623B	I.C, DF&D/A CONVERTER
IC803	LM833M	I.C, BUFFER AMP
IC804	NJM4560M	I.C, BUFFER AMP
IC805	SVIH8DN2175M	I.C, LPF
IC806	SVIH8DN2175M	I.C, LPF
IC871	NJM4556SA	I.C, HEADPHONES AMP
ICP1 (EK, XA, XB) (PA, PE, PC)	SRUF38	I.C,PROTECTOR
ICP2 (EK, XA, XB) (PA, PE, PC)	SRUF38	I.C,PROTECTOR
ICP11	SRUN15	I.C,PROTECTOR
ICP12 (EK)	SRUN15	I.C,PROTECTOR
TRANSISTORS		
Q11	2SB1240-P	TRANSISTOR
Q12	2SB1238QS	TRANSISTOR
Q13	2SD1862-P	TRANSISTOR
Q301	DTC124EST	TRANSISTOR
Q302	DTA124EST	TRANSISTOR
Q401	2SD1862-P	TRANSISTOR
Q402	2SB1240-P	TRANSISTOR
Q403	2SD1862-P	TRANSISTOR
Q404	2SB1240-P	TRANSISTOR
Q405	DTC124EST	TRANSISTOR
Q801	2SC3311A-Q	TRANSISTOR
Q802	2SC3311A-Q	TRANSISTOR
Q803	2SD1450R	TRANSISTOR
Q804	2SD1450R	TRANSISTOR
Q851	DTA124EST	TRANSISTOR
Q852	DTC124EST	TRANSISTOR
Q853	DTA114EST	TRANSISTOR
Q854	DTC124EST	TRANSISTOR
Q855	DTA124EST	TRANSISTOR
Q861	2SC3311A-Q	TRANSISTOR
Q862	2SA1309Q	TRANSISTOR
DIODES		
D11	SVDS5688GT3	DIODE,
D12	SVDS5688GT3	DIODE,
D13	SVDS5688GT3	DIODE,
D14	SVDS5688GT3	DIODE,
D15	SVDS5688GT3	DIODE,
D16	MA4330M	DIODE
D17	SVDS5688GT3	DIODE,
D18	MA4062-H	DIODE
D21	SVDS5688GT3	DIODE,
D22	SVDS5688GT3	DIODE,
D23	MA4062-H	DIODE
D402	MA4051-M	DIODE
D403	MA4051-M	DIODE
D410	MA4033M	DIODE
D411	MA165	DIODE
D603	MA165	DIODE
D604	MA165	DIODE
D605	MA165	DIODE
D612	MA165	DIODE
D613	MA165	DIODE
D614	MA165	DIODE
D615	MA165	DIODE
D616	MA165	DIODE
D617	MA165	DIODE
D618	MA165	DIODE
D851	MA165	DIODE
D852	MA165	DIODE
D853	MA165	DIODE
D854	MA165	DIODE
D855	MA165	DIODE
D856	MA165	DIODE
D857	MA165	DIODE
D858	MA165	DIODE
VARIABLE RESISTORS		
VR601	EVQWVN00004E	V.R, SEARCH
VR871	EVU57A022A14	V.R, HEADPHONES VOL
COILS AND TRANSFORMERS		
L1	SLQX400-D	COIL
L2	SLQX400-D	COIL
L601	VLP0053	COIL
T1 ⚠ (E, EG, EB, EH) (EF, EI)	SLTD5K097SE	POWER TRANSFORMER
T1 ⚠ (EK, XL)	SLTD5K098SG	POWER TRANSFORMER
T1 ⚠ (XB, XA, PA) (PC, PE)	SLTD5K099SX	POWER TRANSFORMER
OSCILLATORS		
X801	SVQ49U338S	OSCILLATOR
DISPLAYS		
FL601	SAD16MT22GK	DISPLAY TUBE
FUSES		
F1 ⚠ (E, EG, EB, EH) (EF, EI, EK) (XL)	XBA2C012TB0S	FUSE(250V,T125㎃A)
F1 ⚠ (XB, XA, PA) (PE, PC)	XBA2C025TB0	FUSE(250V,T250㎃A)
SWITCHES		
S1 ⚠	ESB8249V	SW, POWER
S2 ⚠ (XA, XB, PA) (PE, PC)	SSR187-1	SW, VOLTAGE SELECTOR
S101	SSPD17	SW, LOADING DETECTOR
S102	SSPD18	SW, LOADING DETECTOR
S601	EVQQS705G	SW, OPEN/CLOSE

Ref. No.	Part No.	Description
S602	EVQQS705G	SW, SKIP(R)
S603	EVQQS705G	SW, SKIP(F)
S604	EVQQS705G	SW, STOP
S605	EVQQS705G	SW, PAUSE
S606	EVQQS705G	SW, PLAY
S607	EVQQS705G	SW, NUMERIC(+10)
S608	EVQQS705G	SW, NUMERIC(0)
S609	EVQQS705G	SW, NUMERIC(1)
S610	EVQQS705G	SW, NUMERIC(2)
S611	EVQQS705G	SW, NUMERIC(3)
S612	EVQQS705G	SW, NUMERIC(4)
S613	EVQQS705G	SW, NUMERIC(5)
S614	EVQQS705G	SW, NUMERIC(6)
S615	EVQQS705G	SW, NUMERIC(7)
S616	EVQQS705G	SW, NUMERIC(8)
S617	EVQQS705G	SW, NUMERIC(9)
S618	EVQQS705G	SW, NUMERIC(10)
S619	EVQQS705G	SW, EDIT TAPE LENGTH
S620	EVQQS705G	SW, SIDE A/B
S621	EVQQS705G	SW, DISC LINK
S622	EVQQS705G	SW, TIME MODE
S623	EVQQS705G	SW, PROGRAM
S624	EVQQS705G	SW, CLEAR
S625	EVQQS705G	SW, RECALL
S626	EVQQS705G	SW, REPEAT
S627	EVQQS705G	SW, AUTO CUE
SERVO P.C.B.		
INTEGRATED CIRCUITS		
IC101	AN8373S	I.C, SERVO AMP
IC102	AN8374S	I.C, SERVO PROCESS
IC103	AN8377	I.C, B.T.L DRIVE
IC104	LM2940T5M	I.C, RESET
TRANSISTORS		
Q101	2SA1547QSTV2	TRANSISTOR
VARIABLE RESISTORS		
VR101	EVND3AA00B14	V.R, BEST EYE ADJ.
VR102	EVND3AA00B14	V.R, TRACKING GAIN ADJ.
VR103	EVND3AA00B14	V.R, TRACKING OFFSET ADJ
VR104	EVND3AA00B14	V.R, FOCUS GAIN ADJ.
VR105	EVND3AA00B14	V.R, FOCUS OFFSET ADJ.
VR106	EVND3AA00B24	V.R, TRACKING BALANCE AD
MAGNET RESISTOR ELEMENTS		
RA1	EWS7M0A00Q53	RESISTANCE UNIT

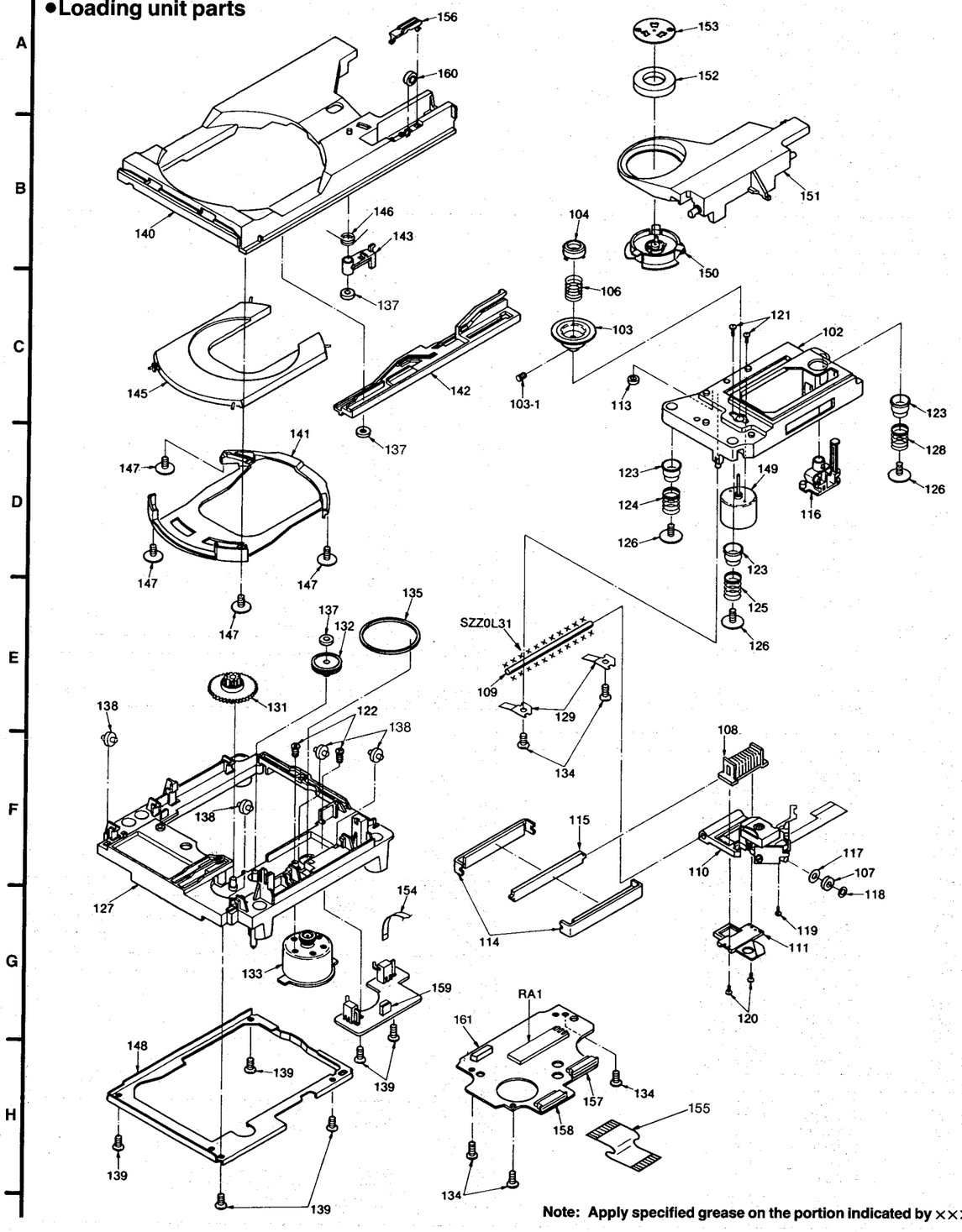
Ref. No.	Part No.	Description
PACKING MATERIAL		
P1 Ⓚ (E, EG, EB, EH) (PA, PE, EI) (EK, XL, XB) (XA, PC)	SPND349	PACKING CASE
P1 Ⓚ (EF)	SPND351	PACKING CASE
P1 Ⓢ (E, EG, EB, EH) (EI, EK, XL)	SPND362	PACKING CASE
P1 Ⓢ (EF)	SPND363	PACKENG CASE
P2	SPSD188	PAD(FL)
P3	SPSD189	PAD(FR)
P4	SPSD190	PAD(BL)
P5	SPSD191	PAD(BR)
P6	XZB60X60A01	PROTECTION BAG(UNIT)
P7	XZB26X17C03	PROTECTION BAG(CORDS)
P8	SPSD152	ACCESSORY BOX
ACCESSORIES		
A1 (EF, XL, XA)	SQUD398	INSTRUCTION MANUAL
A1 (EI)	SQUD400	INSTRUCTION MANUAL
A1 (EK)	SQUD401	INSTRUCTION MANUAL
A1	SQUD402	INSTRUCTION MANUAL
(EG) A1	SQUPL333-E	INSTRUCTION MANUAL
(E, EB, EH) A1	SQUPL333-PA	INSTRUCTION MANUAL
(PA, PE, PC) A1	SQUPL333-XB	INSTRUCTION MANUAL
(XB) A2 ⚠ (XA, PA, PE)	SJA168	POWER CORD
(PC) A2 ⚠ (XL)	SJA173	POWER CORD
A2 ⚠ (XB)	SJA183	POWER CORD
A2 ⚠ (E, EG, EB, EH) (EF, EI)	SJA187	POWER CORD
A2 ⚠ (EK)	SJA193	POWER CORD
A3	SJP2249-3	OUTPUT CORD
A4 (E, EG, EB, EH) (EF, EI, EK) (XB, XA, PA) (PE, PC)	UM-4NE/2S	BATTERY
A4 (XL)	UM-4NEP/2S	BATTERY
A5 ⚠ (XB, XA, PA) (PE, PC)	RJP120ZBS-H	AC PLUG ADAPTOR

Ref. No.	Part No.	Description
CABINET AND CHASSIS		
1	SKUD250ZF0A	CHASSIS
2 (E)	SGPLP333-KE	REAR PANEL
2 (EB, EH, EF) (EI)	SGPLP333-KEB	REAR PANEL
2 (EG)	SGPLP333-KEG	REAR PANEL
2 (EK)	SGPLP333-KEK	REAR PANEL
2 (PA, PE, PC)	SGPLP333-KPA	REARPANEL
2 (XA)	SGPLP333-KXA	REAR PANEL
2 (XB)	SGPLP333-KXB	REAR PANEL
2 (XL)	SGPLP333-KXL	REAR PANEL
3	SKLD8-E	FOOT
4 Ⓚ	SGXD3380ZK0A	ORNAMENT
4 Ⓢ	SGXD3380MA0A	ORNAMENT
5	SUBD15-1	ROD
6 Ⓚ	SBC666-1	BUTTON, POWER
6 Ⓢ	SBC666	BUTTON, POWER
7 Ⓚ	SKCD512KE1A	CABINET
7 Ⓢ	SKCD512SW1A	CABINET BODY
8	SHE185-2	HOLDER
9	SHRD201	PLATE
10 Ⓚ	SGYLP333-KM	FRONT PANEL
10 Ⓢ	SGYLP333-SE	FRONT PANEL
10-1	SGUD224	ORNAMENT
10-2 Ⓚ	SBCD5290ZK0B	BUTTON, OPERATION
10-2 Ⓢ	SBCD5290MA0A	BUTTON, OPERATION
10-3 Ⓚ	SGXD3371ZK0A	ORNAMENT
10-3 Ⓢ	SGXD3371SW0A	ORNAMENT
11	SNE4021	NUT
12 Ⓚ	SBN1161-2	KNOB
12 Ⓢ	SBN1161-3	KNOB, HEADPHONES VOL
13 Ⓚ	SBND120ZC0A	KNOB, SEARCH
13 Ⓢ	SBND120MA0A	KNOB, SEARCH
14	SUSD162	SPRING
15	SHRD202	SPRING
16	CSTW-2	WASHER
17 ⚠ (XL)	SJSD16	AC INLET
17 ⚠ (E, EG, EB, EH) (EF, EI, EK) (XB, XA, PA) (PE, PC)	SJS9236	AC INLET
18	SJJ146B	JACK
19	SJFD4M	TERMINAL BOARD
20	VJA1024	CAP
21	SIKD552062	FLAT CABLE
22	SIKD552061	FLAT CABLE
23	SHR9451	SPACER
31	XTB3+8JFZ	SCREW
32	XTB3+8F	SCREW
33	XTB3+16JFZ	SCREW
34 Ⓚ	SNE2129-1	SCREW
34 Ⓢ	SNE2129	SCREW
41	SJT30643-VML	CONNECTOR (6P)(CN11)
42	SJT30543-VM	CONNECTOR(5P)(CN401)
43	SJSD2221M	SOCKET (22P)(CN402)
44	SJS50780WLM	CONNECTOR(7P)(CN411, 414)
45	SJS50680WLM	SOCKET(6P)(CN412, 413)
46	SJT30747WL	CONNECTOR(7P)(CN601, 604)
47	SJT30647WL	CONNECTOR(6P)(CN602, 603)
48	EMCS0750ZL	CONNECTOR(7P)(CN605)
49	EMCS0750Z	CONNECTOR(7P)(CN871)

Ref. No.	Part No.	Description
TRAVERSE		
TRAVERSE DECK		
102	SISD22-1	TRAVERSE BASE
103	SD0D28-1E	TURNTABLE
103-1	XXE26D5	SCREW
104	SD0D29-2	RING
106	SRQA010N04	SPRING
107	S0RD37	ROLLER
108	S0RD38-E	COIL
109	SUXD123-1	GUIDE SHAFT
110 ⚠	S0AD70A	OPTICAL PICKUP
111	SHRD176-E	COIL HOLDER
113	SHGD148	STOPPER
114	S0YD21-E	YOKE
115	S0YD22	YOKE
116	SHRD177-1	LOCK UNIT
117	SHWD33	WASHER
118	SHWD34	WASHER
119	SNSD31	SCREW
120	XTN2+5G	SCREW
121	XYN2+C8	SCREW
122	XYN26+J6	SCREW
123	SHGD153-1	CUSHION RUBBER
124	SUSD136-1	SPRING
125	SUSD137-1	SPRING
126	SNSD33	SCREW
127	SIWLP555-KN	LOADING BASE
128	SUSD145-1	SPRING
129	SUWD112	GUIDE SHAFT HOLDER
131	SDGD58	MAIN GEAR
132	SDGD59-2	GEAR
133	SIRD94-E	LOADING MOTOR
134	XTB3+10G	SCREW
135	SMBD7	BELT
137	SFUMZ15R61	WASHER
138	SDRD14	ROLLER
139	XTB3+8G	SCREW
140	SIRD97-2E	HOLDER
141	SIRD107-1	TRAY BASE
142	SIRD40-2	RACK GEAR
143	SIRD96	LOCK LEVER
145	SIRD98-2	DISC TRAY
146	SUSD83	SPRING
147	SNSD36	SCREW
148	SIWD105	BRACKET
149	SJGDRF310T-2	SPINDLE MOTOR
150	SIRD51-1	HOLDER
151	SIRD42-3	LEAD WIRE CLAMP
152	S0MD4	MAGNET
153	S0YD2	YOKE
154	SIKD150051	FLAT CABLE
155	SIKD150221-1	FLAT CABLE
156	SHRD150	ROLLER HOLDER
157	SJSD1722M	SOCKET(17P)
158	SJSD2222M	SOCKET(22P)
159	SJT30543-V	CONNECTOR(5P)
160	SDRD12	ROLLER
161	EMCS0552MP	CONNECTOR(5P)

■ EXPLODED VIEWS

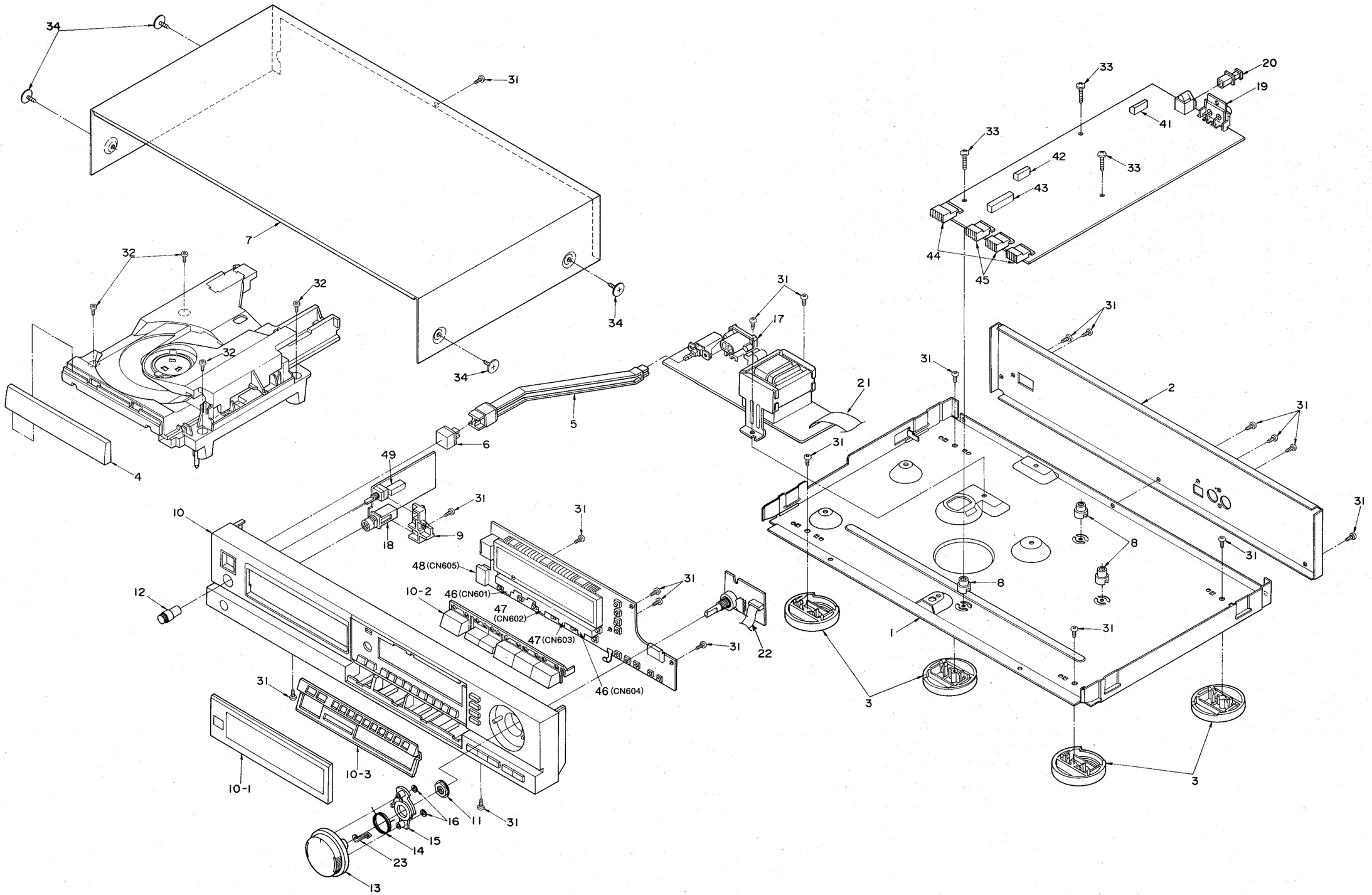
•Loading unit parts

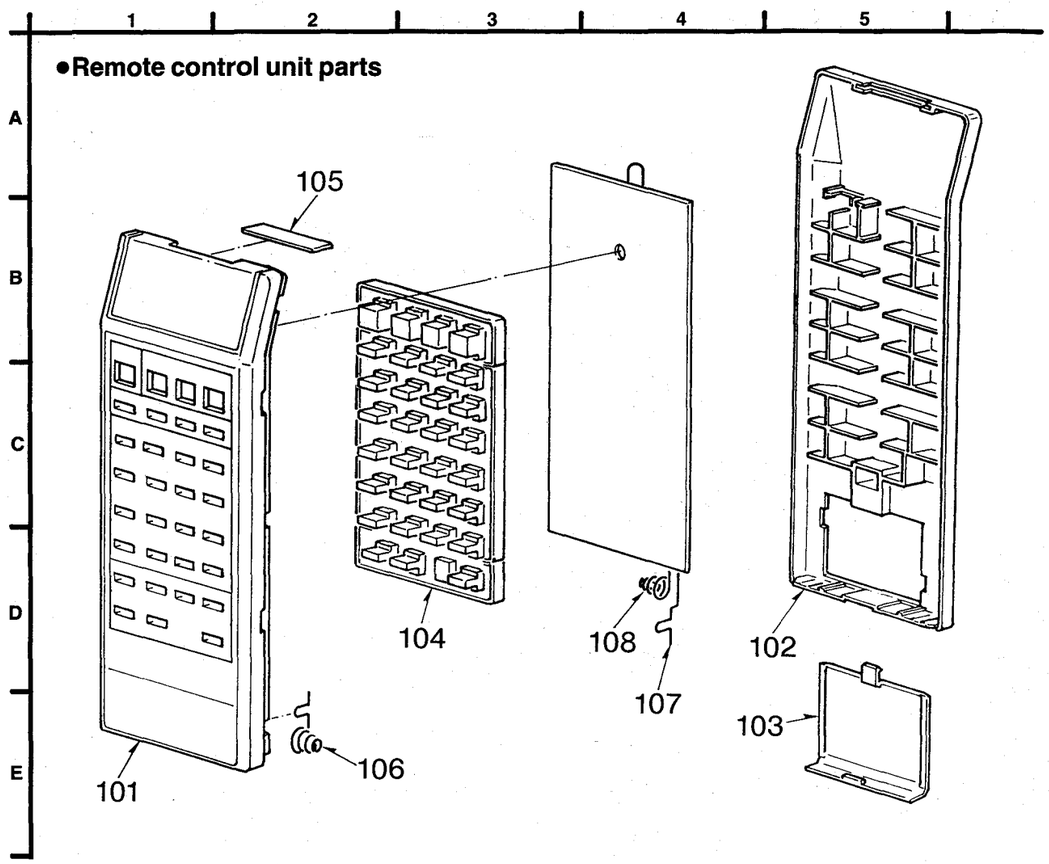


Note: Apply specified grease on the portion indicated by ×××.

8 9 10 11 12 13 14 15 16 17 18 19 20

•Cabinet parts





●Remote control unit parts list

Ref. No.	Part No.	Description
REMOTE CONTROL		
INTEGRATED CIRCUITS		
IC1	MN6014HS	I.C
TRANSISTORS		
Q1	2SC3265Y	TRANSISTOR
DIODES		
D1	LN66-S	L.E.D
OSCILLATOR		
X1	CSB420PB6	OSCILLATOR
RESISTORS		
R1	ERD25TLJ1R0U	RESISTOR
CAPACITORS		
C1	ECUV1H471KCG	CAPACITOR
C2	ECUV1H471KCG	CAPACITOR
C3	ECEA0GK101	ELECTROLYTIC, 100μF, 4V
MECHANISM PARTS		
101 Ⓚ	UR64VCS710	UPPER CABINET
101 Ⓢ	UR64VCS712	UPPER CABINET
102 Ⓚ	UR64CS803A	LOWER CABINET
102 Ⓢ	UR64CS803B	LOWER CABINET
103 Ⓚ	UR64EC804	BATTERY COVER
103 Ⓢ	UR64EC804A	BATTERY COVER
104	UR64CT805K	BUTTON
105	UR52SB327	PLATE(SMOKE)
106	UR64TD374	BATTERY TERMINAL(COMMON)
107	UR64TD808	TERMINAL (+)
108	UR64TD809	TERMINAL (-)
REMOTE CONTROL ASS'Y		
RC1 Ⓚ	EUR64766	REMOTE CONTROL
RC1 Ⓢ	EUR64767	REMOTE CONTROL

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